California Journal

OF SECONDARY EDUCATION

This Month

RECENT MATERIALS OF INTEREST TO SCIENCE TEACHERS, INDUSTRY'S CONTRIBUTION TO DRIVER EDUCATION, A COMMON LEARNINGS PROGRAM, AND PROCEDURES FOR APPRAISING THE TOTAL SECONDARY SCHOOL PROGRAM

A Symposium on

CHANGING CONCEPTIONS IN THE PRACTICAL ARTS

VOLUME 29, No. 3 **MARCH 1954**

Next Month

A SYMPOSIUM ON RECRUITMENT IN HIGH SCHOOL FOR THE TEACHING PROFESSION

CALIFORNIA JOURNAL OF SECONDARY EDUCATION

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The *California Journal of Secondary Education* is published by the California Association of Secondary School Administrators eight months during the year and is issued in the calendar months of October to May, inclusive. Subscription is $3.00 per year; single copies, 50 cents. Annual subscriptions in all countries in the International Postal Union, $3.25. Subscribers are requested to report at once any change of address, giving old as well as new address. Entered as second-class matter at the post office at Berkeley, California, under the Act of March 3, 1879.

Address all business correspondence and requests for subscriptions or copies to *California Journal of Secondary Education*, Rooms 9–10, Haviland Hall, Berkeley 4, California.

Subscription to the *California Journal of Secondary Education* is $3.00 per year. Group subscriptions for joint faculty or organization use or for college classes are also accepted if a minimum of 25 percent of the faculty or group subscribe, at the rate of $2.00.

To purchase microfilm volumes, write University Microfilms, Ann Arbor, Michigan.

EDITORIAL

THE PRACTICAL ARTS IN SECONDARY EDUCATION

One of the most prominent changes that has taken place in the curriculum of secondary schools in America over the past fifty years is the increasing importance of the practical arts. Despite powerful traditional forces and the insistent voices of prominent educators, such as Robert M. Hutchins (see for example his most recent book, *Conflict in Education*, New York, Harper & Brothers, 1953), the movement continues apace. Why is this so?

The explanation seems to lie close to the heart of the educational process in the intimate relationship that always exists between schools and the social setting of which they are a part. American secondary schools have increasingly responded to the will of the people as expressed in their local communities. This is the reason for the trend toward the practical arts. The American people have always exhibited a marked preference for a practical approach to the problems of life on this vast continent; it should be no great surprise therefore to find this tendency reflected in the schools they have created to prepare their youth for living in these communities. Reflected in the symposium this month is a maturing conception in which there is a blending of the "practical" and the "academic" arts (or the humanities as they are often called), two fields which should never have been separated in the first place.

A man's work is pivotal in his life, and an education that neglects fundamental consideration of it is unreal. As youth approaches maturity, the task of preparing for a life work becomes more urgent and a powerful motivating factor in his learning. The response of secondary schools to it is evidence that they are becoming more critically self-conscious of the purposes for which they exist and sensitive to the needs of the people whom they serve. There is ample evidence to suggest a growing recognition of the broadening and human values inherent in the practical arts, as well as their narrower contribution in technical knowledge and skill. This it seems to us is the meaning of the increasing emphasis and the changing conceptions in the practical arts in the secondary schools of America. As we enter a new decade in secondary education, we may confidently look forward to the disappearance of the false line that has so often been drawn between education for culture and education for work. The fact that we have insisted upon one comprehensive high school as the American answer to the problem, rather than providing two separate institutions, is testimony that suggests promise for the shape of things to come.

R. N. B.

Common Learnings at Linden

By T. BENTLEY EDWARDS

Linden is one of the eighteen schools that is participating in the Regional Project in Secondary Education. It is the second of these schools to publish a report. The first was printed in the Journal *in May 1953, and described a new course in General Science at the Gridley High School. The author of the present article was Director of RPSE from September 1952 until August 1953. He is now Assistant Professor of Education on the Berkeley campus of the University of California.*

During the past seven years, a program of common learnings has developed at the Linden High School organized according to the plan suggested for Farmville by the Educational Policies Commission.[1] This program is still developing, but a progress report should prove interesting as it tells how to initiate such a program, and describes the application of certain principles of curriculum development to a particular community.

Although the arguments in favor of a common learnings approach have been adequately described in the publication already referred to, for the sake of clarity they will be reviewed briefly.

When children in grade 9 are scheduled for three successive periods daily with the same teacher, the transition from elementary school, where they are accustomed to spending the entire day with a single teacher, is much less abrupt. As the students progress through high school, the number of consecutive periods scheduled with the same teacher is steadily decreased. When teachers in grade 9 meet fewer pupils per day they may be expected to become well acquainted with these children. They will probably learn not only their names, but something of their family backgrounds, their individual capabilities, their quirks and idiosyncrasies, their hopes and their fears. They will be able to guide their pupils in a way that the great number of personalities encountered by the high school teacher usually conspires to prevent.

In the common learnings program there is ample opportunity for a single teacher to plan a program in such a way that general relationships become evident. Such integration of educational content makes it more appealing to students as well as more easily understood.

The situation in a common learnings classroom is more conducive to the problem-solving approach to education with its emphasis on group

[1] Educational Policies Commission, *Education for All American Youth.* National Education Association of the United States and the American Association of School Administrators, 1201 Sixteenth Street, Northwest, Washington 6, D.C.

projects and on critical thinking. Then, too, the teacher who remains with the same group for three successive periods daily is more likely to consider his obligation to train for civic competence than is the teacher who squeezes breathlessly through the door as the bell rings and hurries out fifty minutes later.

Without attempting to prepare an exhaustive statement of the arguments in favor of the common learnings program, we have listed: improved articulation between elementary and secondary school, less isolated teaching of individual subjects, increased use of the problem-solving approach, more group work, increased attention to the development of civic competence, and most important of all, provision of a home-base from which the bewildered adolescent may derive part of his needed security. To be sure, the scheduling of blocks of time for common learnings classes is not a sufficient condition to effect all of these desirable changes, but such scheduling seems to be a necessary condition, if rapid strides are to be taken.

In 1946, there were signs, in Linden, that curriculum development toward more effective realization of adolescent purposes was long overdue. Parents, students, and teachers realized that the high school was not doing a completely satisfactory job. At the end of the sophomore year an excessive number of students were leaving school. Evidence of lack of interest among many of those remaining in school was unmistakable. From one-third to one-half of the teachers were leaving at the end of each year. A bond issue for a new school building failed miserably, and when the Agriculture Building burned, no money was voted to rebuild it. A follow-up study of Linden graduates showed only 10 percent to be college bound, yet 90 percent of the activities in the Linden High School were aimed at the needs of this small group. The need for curriculum change was clear.

Fortunately this need was evident to the principal, Robert Sharp, for as other studies have indicated,[2] and as the developments in Linden clearly demonstrate, the principal is the key person in any program of curriculum development. His role is especially vital while the program is getting under way. Study of the Linden activity has brought to light a number of specific acts performed by the principal while the program was starting.

In the first place, he submitted to all members of the faculty copies of the Evaluative Criteria prepared for the Co-operative Study of Secondary School Standards. This approach did not work. Although the faculty were aware of the need for curriculum revision they were not ready for a formal attack and the co-operative study forms were not filled in and returned to the principal.

In his second attempt to involve the faculty, Sharp gave a copy of the pamphlet, *Planning for American Youth*,[3] to each member of the faculty.

[2] Grace S. Wright, "Core Curriculum Development, Problems and Practices." *Bulletin No. 5* of the Office of Education, Washington, D.C.: Superintendent of Documents, Government Printing Office, 1952. 104 pp.

[3] National Association of Secondary-School Principals, *Planning for American Youth*. 1201 Sixteenth Street, N.W., Washington 6, D.C.

It seemed to the teachers at Linden that "Farmville" and Linden had much in common. Although the teachers were not ready to create a completely new approach, they saw much in the "Farmville" plan that appealed to them. They liked the idea of putting the freshmen with the same teacher for three consecutive periods. They believed that for civic competence there is a common group of learning experiences which all students should enjoy. They sensed the opportunity for attention to individual needs and for individual counseling.

Once the Linden faculty had not only agreed that some sort of curriculum change was imperative but also had demonstrated a willingness to adopt and support the general plan of "Farmville," the principal took a second step. Having canvassed his staff without success for someone with the necessary knowledge and experience to head up the common learnings program, he invited an experienced elementary teacher to join his faculty for this purpose. This elementary teacher is Audrey Laurison. In 1947 she was principal of the school across the street from the high school, but she had decided to resign her position for personal and family reasons. As soon as Sharp knew that she was leaving, he invited her to join the high school faculty.

A year later, Sharp engaged a second elementary teacher, the wife of the teacher of agriculture. She and Mrs. Laurison worked well together. With Sharp they developed a method of explaining the new approach to the community and laid careful plans to enlist community support. In part these plans called for the formation of a Citizens' Planning Committee. Linden is a fairly small community. An idea of its size may be obtained from the fact that fewer than 300 pupils are enrolled in the high school. Principal Sharp knew everyone in town and was well-liked by the great majority. He had a part in choosing the members of the Citizens' Planning Committee and he asked Mrs. Laurison to explain the proposed program of common learnings to them.

At meetings of the P.T.A., Sharp, Mrs. Laurison, and members of the Citizens' Planning Committee spoke of the proposed new program, using charts and an abundance of photographs taken of school activities and all were able to mingle freely with the parents at these meetings to answer questions and to allay the fears that always come with suggestions for any modification of the traditional high school program.

Unfortunately Sharp did not live to guide the program to full fruition. Two years ago he died suddenly at a meeting with his fellow principals. Eugene Short, who was formerly vice-principal under Sharp, is now the principal. He is keenly interested in the program and dedicated to it. His activities during the past two years have been indispensable to the continuation of the project, activities, by the way, that only the principal is in a position to execute.

For example, Short has been tireless in his work with the community. He knows the Parent-Teacher Association, and they in turn not only know him, but look to him constantly for guidance and assistance. He is

without doubt a most important figure at all meetings of the School Board. He feels that it is his duty to persuade the Board to supply the funds needed for the common learnings classes. As he works with the Board it is easy to see that the welfare of his school and faculty is persistently first among his considerations.

In addition to this formal link with the community he is a popular member of the Lion's Club, and enjoys social exchanges with the great majority of the people in the town. But perhaps the most important role of the administrator is played when he chooses teachers. At Linden, a new teacher is given ample time to adjust to the novel methods that are used. If, after this settling down period, the new teacher shows that he is unable to co-operate in the common learnings program, the administrator suggests, as diplomatically as possible, that the particular teacher would be less frustrated in a different position.

Teachers at Linden are not just hired and left to their own devices. Faculty meetings at Linden are not routine affairs largely for the purpose of making announcements; they are curriculum revision meetings at which the group potential is precisely brought to bear on clearly defined problems. The entire program is keyed to the common learnings classes.

Special teachers are able to make needed contributions. The present enthusiasm of Principal Short dates back to the time when he was vice-principal and was, among other things, responsible for much of the science teaching in the school. At that time, as science specialist, he made a number of important contributions to the original classes. For example, during a study of transportation the ninth graders made a field trip to San Francisco. While they were being taken along the Embarcadero several of them asked how it was possible for the Bay Bridge and the Golden Gate Bridge to withstand the tremendous stresses that were applied to them. On their return to school, Mr. Short was told of the question and asked to come into the class with an explanation. Subsequently he was called in upon a number of occasions, especially during the study of weather, and as he noticed the liveliness and vigor of the group his enthusiasm mounted steadily to its present pitch.

Two of the present teachers of common learnings at Linden did their practice teaching at the school. They liked so well what they saw of the school that they formed what seems to be a permanent attachment.

These two were not looking for a sinecure, for they saw the teachers of common learnings spending long hours in preparation for their work. The extent of this preparation may be expected to decrease as the program becomes established, but the units of work will be in need of constant revision if the program is to retain its present life and color.

First of the units, "Natural Resources of the World" was written by Mrs. Laurison in the summer of 1948. This unit is modeled after the Long Beach units that are so well known and has, as its chief purpose, development of an understanding of the interdependence of nations.

Use of these resource units calls for a large supply of instructional

materials. During these beginning years at Linden, from ten to fifteen thousand dollars has been set aside each year for the purchase of books, film strips, art materials, filing cabinets, project materials, and other instructional materials. For a school of less than 300 students this is undoubtedly liberal financing. Care is taken not to repeat books used in the lower grades, and in the library there is an abundance of books of low reading difficulty and high interest level. The needs of the brighter students have been kept well in the foreground. In fact, the more intelligent students seem to thrive on this individualized approach.

There is no doubt that the individualized approach is only possible with small classes. No teacher at Linden is given more than thirty pupils at one time and most of the classes have no more than twenty-five pupils.

The number of periods devoted to common learnings decreases as students progress through high school. A single period daily is devoted to common learnings in grade 12 and the course is still called Senior Problems. There are two periods of common learnings in grade 11, but the content consists chiefly of United States history, literature, and language. There are also two periods of common learnings in grade 10, but the problems chosen for study are somewhat broader than those selected in the next grade and a strong thread of science is evident in the curricular pattern. In the three periods devoted to common learnings in grade 9, content from language arts, general science, general mathematics, and social studies is required in the development of the units.

Not all of these three consecutive periods are spent exclusively on the units. Part of each day is spent in practice sessions on the three R's. This practice appears to be necessary if students are to acquire facility with fundamental processes. As far as possible, this practice in arithmetic and the language arts is made to serve the immediate needs of the students.

Emphasis throughout is placed upon problem-solving. All classrooms are equipped with tables and chairs that can be rearranged to accord with the demands of the moment. These flexible furnishings combined with an abundance of resource material are most suitable for committee work.

An outline of the common learnings program for the four grades is presented.

Ninth Grade

Core: Global Geography and International Relations; Correlation with Language Arts, General Science, General Mathematics, Social Studies.

1. Understanding ourselves and others: Orientation
2. Understanding our earth: The language of maps and globes
3. Understanding how the nations of the earth have become interdependent: Natural resources of the earth and world trade
4. Understanding how the peoples of the world have become interdependent: World cultures
5. Understanding the field of vocations: Planning my life

Tenth Grade

Core: World History; Correlation with Language Arts, Social Studies.

1. Producing and processing goods and services
2. Communicating
3. Transporting goods and services
4. Conserving natural and human resources
5. Expanding freedom through science, government, religion, and education
6. Expressing religiously and esthetically
7. Recreating

The approach to World History is that of tracing through the centuries man's effort to control his environment in supplying his basic needs. Considered as basic needs in this course are food, shelter, clothing, and recreation. The means by which man has provided them, or the social processes, are presented as separate units.

Eleventh Grade

Core: United States History and Literature; Correlated with Language Arts, Our American Heritage.

1. Colonial ways of living
2. The growth of political and social democracy
   Steps leading to a democratic form of government
   Educational institutions emerge
   Our struggle for freedom
   Drafting the Constitution and planning the new nation
3. The growth of political parties and their importance to a democratic form of government
4. Territorial expansion
5. Industrial expansion—before 1850
6. Democracy on trial
   War Between the States
7. Industrial expansion—after 1850
8. The United States in relation to the world
   Monroe Doctrine
   Tariff and world trade
   War with Spain
   Open Door Policy
   World Wars
   Struggle for peace since World War II
9. Economic struggles
   Capital vs. Labor
   Welfare policies

Since the interests of adolescents lie in the here and now, our experiences in each unit begin with the present, dipping back into history to develop an understanding of how the present came out of the past.

Twelfth Grade

1. Heredity
2. Environment
3. Personality development
4. Conservation of human resources
   Crime and delinquency
   The handicapped
   Health
5. Sex
6. Courtship
7. Marriage
8. Family Life vs. Career
9. Divorce
10. Leisure time and economics
11. Public opinion and propaganda
12. Vocations

The program of common learnings just outlined has been developing at Linden during the past seven years. In general, students, parents and teachers like the program and think that its purposes are being reached. Discipline problems are said to be fewer and morale is high.

This year, for the first time, students are in grade 12 classes of common learnings who have had experience in common learnings classes in grade 9. They are said to be more willing to assume responsibility for their own conduct, more willing to act as individuals, more used to working ahead at their own pace, more skillful at problem solving, and they have the confidence that comes from experiencing successful achievement of assigned tasks.

Prior to the current program of curriculum development, there was a large turn-over of the faculty each year. Of the dozen teachers normally employed, from a quarter to one-half have usually been new teachers. This year, 1953, with the exception of one teacher who was drafted, no teacher has left the faculty of the Linden High School. Their common interest, that of trying to help individual students, has welded the faculty into a single unit.

At least one objective measure of the value of the common learnings approach is available. Before 1949, only 60 percent of those attending the Linden High School remained to graduate. Figures compiled this year indicate that 80 percent now remain to graduate. In conclusion, it is reasonably safe to say that the program at Linden, tailored to meet the needs of individual children in the community, is achieving considerable success.

Self-appraisal Procedures for California Secondary Schools

By DONAVAN CARTWRIGHT, GENE MUSHLITZ, and JOE SMITH

For several years now the California Association of Secondary School Administrators has been concerned with a sound basis for appraising the total secondary school program. Under a very active committee, chairmanned by Donavan Cartwright, Superintendent, Tulare Union High School District, work has been going forward. This effort has been sustained by the belief that it is unwise to limit appraisal of a secondary school program primarily or solely upon the basis of the college records made by those of its graduates who go on to higher education. A carefully prepared document entitled "Procedures for Appraising California High Schools" is now available for wider use in the secondary schools. Its basic philosophy and the objectives for education are those of the California Framework. *Collaborating with Donavan Cartwright in the presentation of this brief report are Gene Mushlitz, Consultant in Secondary Education, State Department of Education, who has been a constant and wise advisor in the project, and Joe Smith, Associate Professor of Education, San Francisco State College, who has had a creative and active role in the work of the committee.*

One appraises a chair not so much by a set of established standards as by its general conformance to the form of the sitter and its agreeableness to its surroundings. In other words, if it satisfies the criteria of good looks and comfort the *sitter* calls it a good chair.

High school programs, on the other hand, tend to be judged according to some set of criteria not necessarily related either to the user or the surroundings. This tends to place the programs more in the position of the antique chair, which often is neither comfortable nor good-looking. Its value is entirely in its conformity to rules governing the age, finish, design, and so forth, of the chair *by itself*.

For five years the California Association of Secondary School Administrators has had a committee at work, trying to establish some reasonable way for appraising the total high school program in terms related to the users of each program and the communities in which they are found. The result of this committee's work is now available as a mimeographed document entitled *Procedures for Appraising California High Schools.*

The emphasis both in this instrument and the procedure which it outlines is on *self-appraisal.* There is no rating involved. There is no accreditation involved.

The *Procedures* are designed, simply, to aid California's high-school educators in the task of stating the goals for secondary education in their communities, and in arranging the data available in their programs, student body, faculty, and communities which can indicate progress toward these goals. Through the committee organization, then, help in evaluating progress and sketching plans for future operations is made available.

The *Procedures* depend upon local committees. Five committees are used: administration, faculty, classified staff, student, and a steering committee composed of the chairmen of the other four. These committees are selected by the local people. These committees establish the local procedures, the timetable, and the method of reporting results. They also do the work of collecting and arranging the data.

CASSA's committee on Evaluation of the Total High School Program will furnish to the local district help in explaining the appraisal process to faculties and governing boards. It will also furnish help in interpreting results to professional and lay groups. These things it will do, if asked; but to any school using the *Procedures* it will send a visiting committee when the data are all in.

This committee will neither inspect nor rate the school. It will sit down with the members of local committees to review the data. It will help local committees arrange and interpret those data. There is no inspectorial function assigned, in the *Procedures,* to this visiting group. The function is, rather, to help the local people to get a different perspective on their work.

This work is structured by the instrument, which is divided into twelve sections:

General Information	Materials of Instruction and Library
Philosophy	School Plant
The School in the Community	Administration
Curriculum	Instructional Staff
Guidance	Classified Staff
Pupil Activity Program	Student Form

The General Information section is designed to collect the "vital statistics" of the school. Size of school, type of school, staff characteristics, pupil-population descriptions, and the like are collected, and are then available as reference material for all. In each of the other sections (except the Student Form) an effort is made to collect pertinent data, some of which may be highly subjective, for answering several questions:

What are the goals?
Who established them? How?
What are the provisions for arriving at them?

Who does the work?
How is progress evaluated? What happens to evaluations?

The Student Form compresses the entire instrument into a short form, and is written in "easier" language. Only the student committee works on this form.

The *Procedures* have been designed with an eye to leaving local school districts free first to desire change and then to plan for change. It does this by providing an opportunity for self-appraisal, which means an opportunity for:

a) *Candid observation of one's own program.* There is nothing in the process to prevent candor, for there are no attendant demands for change based on the findings. Thus, the reasons for "excusing" or "explaining" findings are eliminated, and the district is free to accept the findings as valid bases for proposing change.
b) *Professional staff, classified staff, and students to work together.* All elements of the school family can co-operate in collecting and organizing data, and presenting findings. As the problems of the high school multiply with increasing populations and a decreasing teacher supply, it is going to be important to have the "habit" of co-operating in matters of mutual interest and importance.
c) *Evaluation in terms of local aspirations.* It seems to the committee to be very important that high schools work toward the development of programs which fit their students and serve their communities.

The instrument has been tested and refined in a dozen or so schools, and is now available for general use. You are encouraged to use it. If you are interested, contact:

Donavan Cartwright
Chairman, CASSA Committee on Evaluation
of the Total High School Program
Superintendent, Tulare Union High School
Tulare, California

A final word of caution: It would be wise not to grow overly-enthusiastic about a program of self-appraisal without first securing not only the consent but the enthusiastic approval of two groups—the governing board and the faculty. The committee's experience so far is that only when these two groups have agreed to co-operate is the process even usable.

The committee on the Evaluation of the Total High School Program will continue as an active committee to administer the *Procedures*, to refine them in accordance with your experiences with them, and to organize for general use the significant data obtained. No one believes the job is finished; but all of us who have had anything to do with it feel that a significant step in the development of secondary education in California has been taken.

Won't you take the second, and third, and fourth steps with us?

What Has Private Industry Contributed to Driver Education?

By MARLAND K. STRASSER

The co-operative response of the schools and of business to a serious social problem is reflected clearly in the field of driver education. As with all educational endeavors, the teacher is of crucial importance. Consequently last year the Journal *presented a symposium on teacher training in driver education. This month we feature an article which reports clearly the significant contribution of private industry to the development of the program of driver education. This represents still another example of a marked trend toward the closer collaboration of the schools and private industry. Marland K. Strasser is Field Representative, Accident Prevention Department, Association of Casualty and Surety Companies, San Francisco. Dr. Strasser was, in the beginning, a teacher in Woodland, California, High School. He completed his degree of Ed.D. at New York University in 1950 in the field of driver education. He has written numerous articles in this field and serves on many important committees, including the Executive Committee of the Driver Education Section of the National Safety Council.*

Has industry been fully aware of its responsibilities to the consumers of its products? Has it made a positive contribution to the growth and development of a medium for reducing traffic accidents through a sound program of educating youngsters as they approach the legal driving age? Has it been opportunistic, using the educational system to promote its own best interests? What has private industry *really* done for the driver education program? Since driver education and training have been hastened into maturity by recent legislation in California, this becomes a most appropriate time to consider these pertinent questions.

The advent of the automobile brought with it not only great progress in transportation but also the greatest tragedy in our history—*traffic accidents.* To date these accidents have claimed more than a million lives and inflicted many millions of injuries. As automobile accidents rapidly developed into a major social problem, it became evident that faulty behavior patterns of drivers were a basic accident cause, thus revealing the now generally accepted fact that education must become a key factor in any comprehensive program of traffic accident control.

Only recently has it been considered a responsibility of the secondary

schools to educate persons to be safe and efficient automobile drivers. Although isolated cases of such instruction existed before 1920, it was the mid-'thirties before the subject received serious consideration and even this progress was interrupted by World War II. Since 1947 the program has developed rapidly. There are now about 800,000 students receiving driver education in over 8,500 of the nation's high schools annually.

Contributions of Industry to Traffic Safety Education

The contributions of business and industry to traffic safety education have been made largely in terms of meeting existing needs. These contributions have been flexible in nature, offering the type and amount of assistance needed, where and when it was needed most.

The most evident need in the early stages of the driver education movement was an accurate and adequate interpretation of the potential contribution of education as an effective instrument in the solution of the ever growing traffic accident problem. This was essentially a selling job. It was not difficult to sell educators on the *need* for driver education and training but the implementation of an educational program to meet the need presented many practical problems which included finance, public support, technical assistance, qualified teachers, appropriate instructional materials, adequate equipment, legislation, insurance protection, and research. Business interests have been sensitive to these problems of school administration. They have set as goals of achievement only those which were possible of attainment and have provided assistance to school administrators in overcoming many apparently insurmountable obstacles. Educators have received practical assistance in the promotion and development of driver education and training from the insurance industry, automotive industry, petroleum industry, tire and rubber manufacturers, automobile clubs, and many other representatives of private industry interested in the problems of traffic safety. Let us examine these contributions in terms of the assistance they have given toward the solution of individual problems.

Finance.—Through co-operation of business and industry in making available, free of charge, a vast amount of printed materials, audio-visual aids, training cars, testing equipment and other essentials, the problem of financing driver education and training was reduced largely to the single factor of teachers' salaries. This one factor is, of course, the largest item of cost involved in providing traffic safety education, particularly in driver training where the teacher-pupil ratio is extremely low. To implement the solution of this problem, business leaders encouraged community support for educators who desired to finance a sound program locally, and in California, industry supported legislation providing State reimbursement to local districts for excess costs incurred in offering behind-the-wheel instruction.

Public support.—Strong community support is essential to the realization of the objectives of a school administrator's program. Leaders of

business and industry have been most helpful in creating a favorable public reaction to broadening secondary school curriculum offerings to include driver instruction. These men and women appeared before many service, civic, fraternal, and other organizations in an effort to promote a better understanding of the instructional program and to create more effective public support for it.

Technical guidance.—Because driver education and training was new and its introduction into the school curriculum presented somewhat unique problems, technical assistance of consultants provided directly to school administrators was an important factor in the growth of this program. The services of trained and experienced educators, specialists in traffic safety education, were made available by national organizations. These staff people were able to assist schoolmen in coping with such problems as scheduling, grade placement, student selection, course content, credit, materials, equipment, and many other practical considerations which had to be resolved before the courses could be introduced. Over the years, state and local school districts throughout the country made extensive use of these services and a large measure of the success of many existing programs of driver education can be traced directly to the sound foundation upon which they are built as a result of proper planning at the time of their inception.

In addition to technical guidance, the knowledge and experience of persons in private industry have been used to advantage through actual participation in traffic safety programs in the secondary schools. These persons have discussed pertinent problems of safe driving with classes, conducted assemblies, given road tests to students completing driver training, and acted as both sponsors and participants in such activities as "road-e-os," conferences, and economy runs.

The preparation of qualified teachers.—The preparation of teachers in the field of driver education is probably one of the most widely recognized contributions of industry to the field of traffic safety education. For the past twenty years private industry has provided staff personnel to colleges and universities throughout the United States to conduct intensive training programs to prepare teachers in this field. Colleges and universities have been provided funds to develop training programs and scholarships have been awarded to promising teaching candidates.

Instructional materials.—Since driver education was a new course in the secondary school curriculum, there were no appropriate textbooks devoted to this subject nor was there a source of testing materials to measure achievement of youngsters in these classes. The two textbooks in most general use in traffic safety classes in the various states today were prepared by business organizations having a vital interest in this field. Textbooks, supplementary teachers' manuals, traffic safety literature, and comprehensive achievement tests made available at cost, provided educators with the tools of instruction that could not be obtained at the time through the usual publishing channels.

A large volume of pamphlets, graphs, charts, diagrams, and other types of instructional literature and materials were made available through the courtesy of many industries having a sincere interest in highway safety.

Equipment.—An expenditure of millions of dollars is represented by the combined contributions of many industries to meet the needs for equipment and appropriate films to enrich the content of driver education classes.

During the 1952–53 school year, the new car dealers furnished 6,400 cars valued at $12,000,000 for driver training purposes. Automobile dealers have been providing schools with driver training cars for a number of years and the enormous financial contribution of this industry becomes more impressive as each year passes. A few training cars have been purchased outright and presented to schools by other business organizations and civic bodies.

Most of the fine sound films produced for use in traffic safety education classes have been financed by private industries interested in traffic safety.

Additional materials, equipment, and services which have been made available to schools through outside agencies either free of charge, on loan, or as an outright gift, include psychophysical testing devices, dual controls, fuel, maintenance, demonstration models, brake detonators, and cutaway sections of automobile engines.

Legislation.—In the last three legislative sessions, California has witnessed the enactment of laws prescribing driver education as a requirement for graduation from high school and providing for reimbursement of local school districts for excessive costs incurred for behind-the-wheel instruction in driver training. Business interests in the State worked co-operatively with educators and legislators in framing these laws and lent support toward their enactment.

Insurance protection.—One of the real problems facing educators in developing a program of driver education and training, particularly with regard to the behind-the-wheel instruction, concerned liability. Through the joint efforts of educators and representatives of the insurance industry, problems inherent in the question of liability were resolved. In many instances, local insurance agents, automobile dealers, or other interested parties made adequate insurance protection available to school districts either free or at a very nominal charge.

Research.—In any new area of education, particularly one dealing so directly with such qualities of human behavior as those involved in operating a motor vehicle in our complex pattern of modern traffic, a most important factor will be that of adequate research. There is need for factual information pertaining to characteristics of drivers, the influence of various types of driving conditions and situations upon driver behavior, best techniques of driver training instruction, and similar problems. Through direct grants of funds to colleges and universities throughout the United States to conduct needed research and by providing funds for fellowships given to graduate students qualified to conduct pertinent re-

search studies, private industry has made a significant contribution toward the fulfillment of these research needs.

The Future Role of Private Industry in Traffic Safety Education

Business and industry have been of material assistance to educators in the conception and development of driver education and driver training in the secondary schools. Now, as this program is attaining maturity, it is highly desirable that the co-operative efforts of education and industry, which have been so effective in the solution of past problems, be focused on a solution of problems of the present and future.

Which problems have been solved in whole or part?—Progress has been made in overcoming the obstacles impeding the development of driver education and training. Means have been devised to finance sound programs, the public is convinced of the desirability of teaching traffic safety in our schools, colleges are preparing teachers in regularly scheduled safety and driver education courses, textbook publishers are making a broader assortment of text and other materials available, legislators are supporting the program and adequate insurance protection is available. Some of these problems have been adequately met while others must be pushed aggressively toward final solution.

Needs of the present and future.—Although many of the problems of driver education and training have been resolved, at least in a substantial measure, there are still many to be faced. Training cars, testing devices and other necessary equipment, funds for needed research and leadership training, resource persons to enrich the instructional program, properly developed legislation, and continuous public support represent present and future needs of driver education that, in the public interest, can be supported by industry.

Responsibilities of Industry and Education Toward the Program of the Present and the Future

The contributions of private industry to the solution of problems of driver education have been significant in the past and their continued assistance can be most helpful in making this training even more effective in the future. However, they must not stand by paternalistically attempting to assume adolescent responsibilities for a program that has grown to a dignified maturity. Now that driver education is successfully established in the secondary school curriculum, industry must staunchly resist the temptation to make any use of this fine educational program for publicity purposes.

Educators, too, have definite responsibilities regarding the future of traffic safety education. They must accept the challenge of so molding this program that it will achieve its greatest potential as a control of traffic accidents. This can be done only through the process of continuous self-appraisal and improvement of both driver education and driver training.

Recent Materials of Interest to Teachers

SCIENCE

By PAUL DeHART HURD

Beginning this month, the Journal *will feature from time to time a section entitled "Recent Materials of Interest to Teachers." Acting upon the advice and with the help of the Consultant Editors, we shall present a brief, critically selected list of publications in the various subject fields. The thought behind this venture is that teachers may find it useful to be able to check their own professional reading to make certain that they are keeping abreast of the most significant developments in their fields. The first in the series is in the field of* Science *and has been prepared by Paul DeHart Hurd, Assistant Professor of Education, Stanford University. We invite your reaction to this idea so that we may be guided in its future development.*

BROWN, KENNETH E., and JOHNSON, PHILIP G. "Education for the Talented in Mathematics and Science." *Bulletin* 1952, No. 15. Washington, D.C.: Government Printing Office, 1953. vi + 34 pp. 15 cents.

The bulletin is a report of a joint conference of the Co-operative Committee on the Teaching of Science and Mathematics of the American Association for the Advancement of Science and the United States Office of Education. The report will be of interest not only to science teachers but to guidance counselors, school administrators, supervisors, directors of teacher education, curriculum co-ordinators, and laymen who desire to strengthen secondary school instruction for talented students.

In this pamphlet are considered the following aspects of the education of the talented: who are the talented?; the need for the talented in science and industry; ways of identifying the talented student; methods of providing for the talented, such as special schools and classes, acceleration, etc.; classroom activities for the talented; out-of-class activities; guidance procedures; and science facilities for the talented. Following the main body of the report are 83 specific practices and activities for improving the instruction of the talented. The bulletin contains an extensive bibliography of publications on the gifted student.

BURNETT, R. WILL (Editor). *Selected Science Teaching Ideas of 1952.* Washington, D.C. (1201 Sixteenth Street, N.W.): National Science Teachers Association, 1953. 57 pp. $1.50.

This book contains reports of fifteen teachers on their own "best prac-

tices and most effective techniques" for improving the quality of their instructional program. The reports were selected from a much larger number on the basis that they "best presented noteworthy ideas, practices, and techniques of practical value to other teachers." The publication is extensively illustrated with photographs of science students in action.

This book is the first of an anticipated series to be developed as an outgrowth of the program of Recognition Awards for Science Teachers sponsored by the American Society for Metals and conducted by the Future Scientists of America Foundation of the National Science Teachers Association.

Future Scientists of America Foundation, *1954 Book of Rules and Information.* Washington, D.C. (1201 Sixteenth St., N.W.): National Science Teachers Association, 1953. 8 pp. Free.

A publication of the Future Scientists of America Foundation explaining the policies and contest rules of the Science Student Achievement Awards and the Science Teacher Recognition Awards. The program has the approval of the National Contest and Activities Committee of the National Association of Secondary School Principals. This FSAF contest is based upon student projects or investigations which demonstrate the methods of science. It is not an essay contest.

JOHNSON, PHILIP G. "Science Facilities for Secondary Schools." Miscellaneous *Bulletin* No. 17. Washington, D.C.: Government Printing Office, 1952. iii + 38 pp. 25 cents.

This publication has been prepared by a Special Committee of the National Science Teachers Association, under the chairmanship of Philip G. Johnson, formerly of the U.S. Office of Education. "Science Facilities for Secondary Schools" presents those principles which are fundamental to the planning of science facilities in schools, with special reference to the small high school.

Part I of the bulletin presents basic considerations related to science facilities and Part II, the planning and developing of science facilities. Drawings and photographs are widely used to illustrate the textual material. A glossary, bibliography, and checklist of questions which focus attention on factors to be considered in the planning of science facilities are also included in the bulletin.

MARTIN, W. EDGAR. "The Teaching of General Biology in the Public High Schools of the United States." *Bulletin* 1952, No. 9. Washington, D.C.: Government Printing Office, 1952. ix + 46 pp. 20 cents.

A bulletin of special interest to biology teachers and general curriculum workers in secondary school science, prepared by W. Edgar Martin, specialist for biological science in the U.S. Office of Education.

This study reports on the courses in biological science offered in a sample of 1,072 public high schools in the United States. The survey covers the following aspects: course offerings in biological sciences; science requirements for graduation; enrollment and class size in general biology; instructional time and methods of scheduling; teachers, teaching load, certification, and experience; organization of the general biology course; laboratory work; facilities and equipment; textbooks and supplementary reading materials; methods of supplementation, such as field trips, projects, and science clubs; appropriations and expenditures; and conditions affecting the teaching of biology.

All the data in this bulletin are presented in a manner that makes it possible to compare situations in high schools of varying size. The data are summarized in thirty-three excellently organized tables as well as in essay form.

National Association of Secondary-School Principals, "Science in Secondary Schools Today." *Bulletin*, Vol. 37, No. 191. January 1953. Washington, D.C. (1201 Sixteenth Street). 207 pp. $1.50.

In this bulletin more than fifty contributors discuss the many aspects of science education in American high schools. Some of the major topics discussed in this bulletin are: objectives of science teaching; implications of elementary science for high school science; trends in each of the high school sciences; science experiments; science laboratories; textbooks, workbooks, and laboratory manuals in science; science education through radio and television; science fairs; evaluation of instruction; teaching scientific attitudes and methods; the relation of problems of the atomic age, national emergency, and conservation to high school science teaching.

The authors of the thirty-two articles include science specialists from the U.S. Office of Education, well-known science educators, and high school science teachers with special interests.

This bulletin presents the most comprehensive summary of practices in high school science teaching since the Forty-Sixth Yearbook, Part I, of the National Society for the Study of Education, published in 1947.

Patterson, Margaret E. (Editor). *Science Clubs of America. Sponsor Handbook.* Washington, D.C. (1719 N Street, N.W.). 1953 Edition. 64 pp. $1.00.

The most complete single publication on the organization and activities of science clubs. In addition, the handbook includes: a chapter on local and national science fairs; the national science talent search; free and low cost materials for science clubs; Science Service Aids for science clubs; and co-projects (projects carried on co-operatively with nationally known scientific organizations).

SCHENBERG, SAMUEL (Editor). *Laboratory Experiments with Radioisotopes for High School Science Demonstrations.* (U.S. Atomic Energy Commission.) Washington, D.C.: Government Printing Office, 1953. viii + 53 pp. 25 cents.

This book contains 20 laboratory experiments with radioisotopes specifically planned for courses in high school biology, chemistry, and physics. Each of the experiments are outlined in terms of purpose, materials, method, and discussion. The experiments selected for inclusion in the book were selected upon the basis of their importance in illustrating basic concepts of atomic energy. All the experiments have been "tested" by a group of high school science teachers and also reviewed by the Health and Safety Division of the U.S. Atomic Energy Commission.

UNESCO, International Bureau of Education — Publication No. 139. *Teaching of Natural Science in Secondary Schools.* Geneva: International Bureau of Education, 1952. 216 pp. $1.50. (Available in the U.S. through Columbia University Press, 2960 Broadway, New York 27, N.Y.)

This book is a study of the teaching of natural science (biology, zoology, botany, mineralogy, geology, physiology, anatomy, etc.) in forty-eight countries of the world. The study was conducted jointly by UNESCO and the International Bureau of Education. Questionnaires were sent to the ministries of education in each country asking for specific information in the following categories: place of natural science in the curriculum; aims of natural science teaching; principal questions treated in the natural science syllabus; teaching methods; scientific and pedagogical training of teachers; and several miscellaneous items, such as trends in natural science courses, listing of textbooks and others.

Not only will this book prove to be interesting reading, but in many places even startling. For example, in over 50 percent of the countries natural science is a compulsory course in the secondary school and in many other countries natural science is required throughout the entire secondary years. The multiplicity of aims assigned to natural science teaching would be a challenge to any curriculum committee to exceed in number.

A valuable reference for those seriously interested in the professional aspects of science education.

WATSON, F., BRANDWEIN, P., and ROSEN, S. (Editors). *Critical Years Ahead in Science Teaching.* Cambridge: Harvard University Printing Office, 1953. 48 pp. (Free copies available from Mr. Elbert Weaver, Phillips Academy, Andover, Mass.)

A report of the conference on nation-wide problems of science teaching in the secondary schools of the United States, held at Harvard Uni-

versity July 15 to August 12, 1953. Primarily the report is concerned with the supply and demand of high school science teachers over the past few years and projected needs during the next decade. Chapters are also devoted to the preparation of science teachers and science teaching as work and career.

The seriousness of the situation is shown in the fact that "already the annual need for new science teachers exceeds 7,000 and will soon approach 10,000, while at present a maximum of 5,000 potential replacements graduate from college." Furthermore the number of teachers prepared to teach science has *decreased* each year since 1950, the total decrease since then being 48.7 percent.

ZIM, HERBERT S. (Editor). *First National Convention of the National Science Teachers Association.* Washington, D.C. (1201 Sixteenth Street, N.W.): National Science Teachers Association, 1953. 33 pp. $1.00.

A summary of the major addresses and reports of symposiums and discussion groups of the first national convention of the National Science Teachers Association. Two articles which should prove of value to any science teacher are those by Philip G. Johnson (U.S. Office of Education) on *The Future Scientist of America Foundation* and Lyle W. Ashby (Professional Relations, National Education Association) on *Is the Greatest Thing in Science in Danger?* Summarizations of the convention's nineteen work discussion groups are also briefly reported.

INGLEWOOD HIGH SCHOOL ADOPTS RECREATIONAL INSTRUMENTS TO MAKE MUSIC APPEALING TO ALL

School administrators in a California community are pioneering new methods to bring music into the lives of a greater number of the students. The Inglewood High School of Inglewood, California, has established a "double" first in its music program. The school has introduced an accredited class in accordion and guitar . . . two instruments not included in the academic music study of other schools. In addition the school agreed to a further initial step in this new study: it has agreed to purchase both accordions and guitars and provide necessary instructional supplies just as it does for the band and orchestra.

Arnold Murray, music director at Inglewood, sees this step as the beginning of a new trend in music study that will broaden the scope of school music to satisfy the wider variety of American music tastes.

—*AMC News*, September 1953

Symposium

Changing Conceptions in the Practical Arts

In his introductory article, Lee D. Bodkin has provided the keynote for this symposium. As Assistant Supervisor of Trade and Industrial Teacher Training, California State Department of Education, Bureau of Industrial Education, and the University of California, Los Angeles, Mr. Bodkin has the opportunity to see many programs of industrial education at first hand. His estimate of the trends in educational thought in regard to the "liberal" and "practical" arts and the so-called "academic" subjects versus the so-called "vocational" subjects has been arrived at with the help of an educational background in both fields. Fifteen years of experience as an auto mechanic and service department supervisor finally led Mr. Bodkin into teaching vocational auto mechanics in Fresno. After five years, he was appointed to the position of Assistant Supervisor of Trade and Industrial Teacher Training at the University of California, Berkeley, from where he moved to his present position in 1947. A graduate of Fresno State College, Mr. Bodkin is at present working toward his doctorate at U.C.L.A. He is Secretary-Treasurer of the California Industrial Education Association and a Consulting Editor of this Journal.

Changing Conceptions in the Practical Arts—An Overview

By LEE D. BODKIN

Over the years there has been ever present a barrier between the liberal and fine arts on the one hand and the practical arts on the other. This stumbling block to full educational vision has, however, been worn down with time, until today the problem is of a pseudo nature, existing in the thinking of fewer and fewer educators.

Education of all of the children of all of the people is the concept of education long established in the United States. America's system of education has been the realization of a dream of those who longed for a free society where the hopes and aspirations once reserved for the few would ultimately become the possession of many. Aristotle said in 300 B.C.: "We cannot determine with certainty to which men incline—whether to instruct a child in what will be useful to him in life, or what

tends to virtue, or what is excellent; for all these things have their separate defenders."

History teaches that no one pattern of education serves the best interest of all individuals. It must be our concern not that a program be academic or that it be vocational, but that it be a program designed by the combined forces of all areas of education. The problem is universal, and as emphasis is placed in one direction or the other it must be because this emphasis is necessary if we are to prepare the individual effectively for the life he hopes to live. The familiar phrases, "child-centered," "the whole child," "core curriculum," and many others are all evidence of earnest effort to meet the needs of students as they are found in every classroom. Subject matter, of course, is important, but it is important only to the extent that it is reflected in the student's learning. It has been said that "if the mind is trained and the hand left unskilled a man is only one half educated," and the converse is most certainly true.

In the practical arts there has been a transition from the narrow concept of *tool processes* to one of *educational experiences.* "Learning by doing" is not confined to the kindergarten, primary, or elementary areas of our educational structure, but is equally effective wherever it may be brought into practice. We must understand that education is a single process—a process concerned with developing our youth as individuals, each of whom is one being, not two or more separate beings within one body. They live a democratic life, one which is all-encompassing, in which all actions and reactions are not only interrelated, but correlated and greatly integrated as well. Given these assumptions, we must conclude that the single over-all purpose of education is to develop youth for a complete, worthy, and satisfying membership in our society.

In this preparation for living a democratic life, no one area of education can be credited with or held accountable for the success or failure of the preparation. Living includes working, playing, visiting, sleeping, or activities denoted by any other action words we may wish to supply. Doing any one of the many activities is living; hence it is impossible to ascribe to one segment of the total process of education a sub-purpose called "living" and to another segment the sub-purpose of "working." Each segment has a responsibility for the over-all preparation. It is true that the practical arts have some specialized objectives: (1) development of desirable attitudes, (2) acquisition of knowledge, and (3) development of skills; but these objectives hold equally true in the so-called "academic" fields. While the teacher in the shop does not pretend to teach the conjugation of verbs, he would be derelict in his duty if he did not uphold the accepted standards of written and spoken English in the daily conduct of his classes. It is not only important but vitally necessary for the future craftsman-citizen to be skilled in the art of communication. The opportunity exists in those shops to make mathematics, science, art, and communications a vital, living part of the educational experience found there. The alert teacher of the practical arts who is mindful of his responsibility

sees his job in its proper perspective and works in co-operation with other members of the staff in trying to educate the whole child.

With approximately one-sixteenth of the world's population, America cannot compete with the manpower of the Eastern world. Our survival depends upon trained minds and skilled and ready hands; upon intellectual competence and superiority. The practical arts are concerned with production and distribution; with life in the home, on the farm, in industry, in the store, and in the office. Success in any one of these demands a trained mind and a skilled hand—and all are basic in the lifeline of our democracy. America's system of education has become not only the symbol but the means of America's great contribution to the world. The teachers of America are showing the way to this concept of our democratic society.

THE HIGH SCHOOL STUDENT SPEAKS

High school students say they would like additional courses and experiences that will better help them solve and deal with problems in everyday living, according to a survey conducted recently by the Metropolitan School Study Council, a research affiliate of Teachers College, Columbia University.

The council is a group of school systems in seventy cities and towns in New York, New Jersey and Connecticut which are working for co-operative self-improvement. A committee from twenty-six of these communities was established two years ago to study the progress of today's high schools.

The report, "The Consumer Views the Secondary School Program," was issued by the council for the guidance of its members, and was prepared by Leslie Moore, a social studies teacher in the Bloomfield (N.J.) Junior High School. It is the first in a series on the adequacy of current high school programs. The council's Committee on the Secondary School Curriculum is in charge of the surveys, the object of which is to get first-hand suggestions from students, teachers and parents on how the high school is being, or can be, improved.

Topping a list of six major improvements suggested by the students queried was the recommendation that their schools should "provide a core of required, practical subjects geared to contemporary living." The practical approach was especially needed in family relations and citizenship, they said.

Emphasizing the need for a more realistic approach in high school education, the students agreed that the courses which made the greatest impression on them "emphasized practical application, such as those in home management, cooking, typing, journalism, and co-operative vocational courses."

The Practical Arts—Past, Present, and Future

By AUSTIN J. MATILLA

In this thoughtful analysis of the whole field of the practical arts, Austin J. Matilla has given a background for the entire symposium this month. Mr. Matilla, formerly teacher of business education subjects at Santa Maria Junior College, is currently conducting a study of the load of teachers in the junior colleges of the State as a part of his doctoral work in the field of secondary education at Stanford University.

A beginning student of education, treading his way through the semantic jungle of curricular terminology, might question the restriction of the use of the term "practical arts" to those courses within the fields of agricultural education, industrial education, home economics, and business education. If the word "practical" connotes functionality, then why are such courses as journalism, driver education, radio script writing, and public speaking omitted from classification under the term? However, the expression was not coined with reference to the present-day secondary curriculum, with its myriad of courses; rather, it appeared around the turn of the twentieth century, when courses representative of vocational preparation began to intrude themselves into the public secondary school curriculum. Since the majority of courses composing the curriculum at this time were classified as "liberal" arts, it seemed logical to distinguish these new courses, designed to prepare students for work, as the "practical" arts.

That these courses were just entering the curriculum some eighty years after the first public high school appeared illustrates the tenacious grip of the classics. But the social, economic, and political forces which were transforming the United States from an agrarian to an industrial nation were potent adversaries of those secondary school educators who would have maintained the status quo. The entrepreneurs who were converting vast natural resources into the sinews of American industry clamored for trained workers to man their factories and offices. Also, the populace, which had increased to 77,000,000 by 1900, demanded that secondary schools train students for the jobs which beckoned in the world of industry. To this chorus haranguing the high schools, the farmers continued to add their ever-persistent voices.

In 1913, the Congress created a Commission on National Aid to Vocational Education whose efforts resulted in the enactment of the Smith-

Hughes Act of 1917, the Magna Carta of vocational education. After its passage, the practical arts slowly, but perseveringly, found their way into the secondary curriculum; by 1930, they composed 43 percent of the subject offerings of the high school.

The initial courses called the "practical arts," then, were the progenitors of hundreds of courses which have entered the curriculum to make the secondary school more adaptive to the needs of American youth. Each of the quartet comprising the so-called practical arts has its own story of evolution, present status, and future role in the secondary schools. The remainder of this article will relate the narrative for each of these areas.

Agricultural Education

Although the majority of citizens in nineteenth-century America received their mail via R.F.D., the secondary schools contributed little to aid them in adjusting to this rural economy. Agriculture courses were among the last of the practical arts to enter the high school curriculum.

The first instance of an agriculture course in a secondary school is recorded in the year 1821, but not even the crest of the agrarian movement could infiltrate the public high schools to any noticeable degree. The first wedge driven by agricultural elements into the public education system was imbedded on the level of higher education. This occurred with the passage of the Morrill Act of 1865 which established land-grant colleges. With its enactment the farmers felt that their educational needs could be satisfied, and consequently lessened their pressure for this type of education in high schools. In this hope the farmers were disillusioned, for the agricultural colleges failed to provide the necessary agricultural education. The effects of the Morrill Act did percolate to the secondary level when a few states, led by Alabama, established agricultural high schools patterned after the land-grant colleges, but these institutions were ephemeral and had all but disappeared by 1900. Thus the nineteenth century passed without appreciable gains for agricultural education in the public high schools.

As American high schools increased in number and their enrollments mushroomed after 1900, so did the number offering agriculture courses. By 1916, Bureau of Education figures showed 3,675 secondary schools teaching agriculture. Of the practical arts, agricultural education has probably benefited most from the provisions of the Smith-Lever and Smith-Hughes acts. At any rate, agricultural education was greatly stimulated after these acts had been passed by Congress, so that by 1946, the total enrollment in agriculture classes, both day and evening, was over 450,000.

Because of the wide variation in the types of agriculture in various sections of the country, the high school program in agriculture is characterized by diversity. Two types prevail: (1) vocational agriculture, both reimbursable from federal funds and nonreimbursable; and (2) general agriculture for all students. The major courses in vocational agriculture consist of farm crops, animal husbandry, soils, horticulture (vegetable gardening and fruit growing), farm engineering, and farm management.

In nonvocational agriculture, typical courses are landscaping, gardening, fruit growing, and consumer education.

In many ways agricultural education has surpassed other subject fields in the use of teaching techniques in accord with modern educational theory. The project method has long been a key teaching device in this area. "Learning by doing" epitomizes instruction in agriculture. School farms provide actual work experience, or agriculture instructors teach by supervising youth in the daily work on their parents' farms. Another characteristic of vocational agriculture has been the close affiliation of the program with the community. Finally, high school agriculture departments have sponsored farm organizations for rural youth, among which the Future Farmers of America enrolls the largest membership. This organization seeks to promote good citizenship and the best type of rural life.

Focusing the spotlight into the future of agricultural training in our public secondary schools, the census figures of the past fifty years convey significance. Sociologists have been cognizant of two important trends affecting the agricultural economy of the United States: first, the decreasing number of agricultural workers; second, the movement of individuals from rural areas to urban centers. What is the significance of these two social phenomena for agricultural education? Do they mean that high schools should curtail their offerings in this area?

The answers are found in an examination of the cause of these movements—industrialism and its accompanying technology. Industrialism has transformed the farmer from a teamster to a tractor driver. He must now be, to some degree, an agronomist, a geneticist, a marketing specialist, and an accountant. In addition to these job requirements, the farmer must have an understanding of the relation of agriculture to the nation's economy, as well as the skills required of all citizens of a democracy. To enable the farmer to perform his job proficiently, our high schools increasingly believe that they must offer more, not fewer courses in agriculture in tomorrow's high schools. Admittedly, there may be fewer students who choose this type of livelihood; but this decrease in number will be offset by the additional training needed by those who elect it.

In order to provide this broad training, agriculture instructors are recognizing the necessity of incorporating subject matter from other fields into the program for agriculture students. To develop social competence, agriculture is being correlated with social studies. Materials from both the physical and life sciences are becoming requisites in order that the knowledge necessary to cultivate soils and grow livestock can be obtained. Procedures from business to acquaint the agriculture student with the machinations of the world of accounts, market reports, and governmental regulations are being deemed desiderata as farms assume the image of "big business."

One problem confronting agriculture teachers in our high schools, especially in California, concerns the type of education which should be made available to itinerant farm youth. We can look for some type of agricultural education that will provide for upgrading these marginal workers.

Another aspect of agricultural education just now coming to the center of the stage is its contribution to the general education of all youth. All people are consumers; most purchase food products. Agricultural education can perform a vital service for all citizens in helping them buy and consume farm products advantageously and economically. Also, the American people fortunately possess more leisure time now than ever before. Agricultural education cannot only instill a predilection for such activities as landscaping, gardening, and animal raising, but also furnish information that will enable students to pursue them both profitably and pleasurably. These are only two of the many directions in which agricultural educators are looking in their attempt to participate in the general education of all secondary school students.

In recapitulation, the trends in agricultural education appear to be: to provide additional vocational agriculture courses; to correlate agriculture and other subject fields; to satisfy the needs of students who are going to become farm laborers; and to contribute to the general education of all secondary youth.

Business Education

With the appearance of bookkeeping on the class schedule of the English High School of Boston in 1823, business education became the first of the practical arts to make its debut in the public secondary school curriculum. During the period 1875–90, commercial arithmetic, business forms, commercial law, and commercial English augmented the meager offerings among business subjects. Another milestone occurred when Pittsburgh High School established a commercial department in 1872. However, the public high school ran poor competition with the private business school in training business workers during most of the nineteenth century, and the real growth in this area of the curriculum took place after 1890.

In addition to the unprecedented expansion of industry which necessitated the employment of office workers in increased numbers, two other events accelerated the growth of the high school commercial curriculum. The first of these was the recognition of the utility of the typewriter in speeding the communications of the business world. Second, the introduction of Gregg shorthand further whetted the aspirations of the commercial educator to find a chair in secondary school faculty meetings.

Three committees of the National Education Association studied commercial education in 1903, 1915, and 1919. The last-named committee significantly advocated broadened commercial education for economic and social life. In spite of this recommendation, business education has remained primarily vocational in aim.

The royal family—typing, bookkeeping, and shorthand—has ruled the business education curriculum for the past fifty years, despite the announcements of successive census reports that a growing army of workers was being mobilized in distributive occupations. Not even the passage of the George-Deen and George-Barden acts, which provided federal subsidies

to distributive education, has advanced this phase of business education significantly.

Several future trends in business education are discernible when gazing into the crystal ball for prognostications. There is growing recognition of the contribution of business education to general education. Consumer education courses are coming into vogue in many commercial departments. Also, attempts are being made to interest students in such courses as junior business training, business law, and business mathematics for their general education values.

Many schools are attempting to remedy the deficiency which has prevailed in the education of distributive workers by planning and discussing programs in salesmanship and retailing. Moreover, there is an indication that business educators are realizing that today's business worker requires competence in machine operation. An increasing number of high schools are installing machine equipment to provide this training for commercial graduates. Also, recognizing that many business occupations require a versatile person who can type, keep a simple set of books, act as receptionist, operate a calculator, and perhaps fill in as a stenographer if the occasion demands, commercial educators are striving to provide a broader field of skills for each trainee.

For many years the commercial program, rightly or wrongly, has been considered a dumping ground for the lower calibre of student. The road has usually been rough for these students in shorthand and bookkeeping courses, and the result has been early elimination from school. Now there is a trend toward providing these marginal students with training in accordance with their abilities, in clerical work, filing, and general office practice.

Because research has disclosed that many job discharges are due to poor human relations rather than incompetence in work skills, commercial educators are considering the addition of courses stressing personality, grooming, and human relations into their school curriculums. This is a promising trend in business education.

Although they are not a new issue, work experience programs still remain but a hope in the minds of some business educators. Despite the difficulties of management, some high schools are operating successful programs; others are contemplating their installation.

In summary, business education is looking forward to increased participation in the general education of all secondary youth; providing for those students who have not previously been served by the program; offering broader training to each student graduated; and offering additional courses to enable the business student to fulfill his work requirements more efficiently.

Home Economics

Even though the elementary schools of Boston taught needlework as early as 1789, homemaking education in the public high schools lagged; cookery was not appended to the high school curriculum until 1885. Perhaps

one of the reasons for this difficulty was the family life of the nineteenth century farm community, in which girls learned the rudiments of the home arts within the confines of the family household. When the growth of industrial centers fostered the shift to smaller, more mobile, urban family patterns, such training became less universal. Hence the homemaking teachers contrived a more convincing case for the inclusion of their subjects in the high school curriculum.

Homemaking education has carved its niche in the secondary curriculum largely since 1920. Federal subsidies occasioned by the Smith-Lever, Smith-Hughes, and Bankhead-Jones acts have played significant roles in this development.

A large proportion of high schools offer home economics courses. In 1938–39, 72 percent of a sample of 14,121 secondary schools gave at least one course in this field. Enrollments in senior high school courses have been proportionately lower than in the earlier school years.

Food preparation and clothing construction are the two courses that have predominated homemaking education from its incipient stages to the present day. However, the homemaking program seems to have received a shot of adrenalin in recent years which has broadened its aims. The theme which permeates this field at the present time revolves around the activities of home and family life in all phases. In addition to considering the feeding, clothing, and housing of the individual and the family, homemaking now includes such topics as the management and use of individual and family resources, the protection of health and care of the sick, the growth and development of the members of the family, the care of children, everyday social relationships, and the development of individual and group interests within the home. Moreover, homemaking is interested in the social, political, and economic conditions affecting immediate personal, home, and family life.

These more comprehensive objectives reflect the changes in society which today are affecting the family. Smaller families, more compact living conditions, the changed position of women, increased participation of husbands in home management and child rearing have all had their influence on homemaking education.

Although a few secondary schools have for some time brought boys into the homemaking program by offering boys' cooking classes, the newer trend is to have both sexes participate in the activities of classes in home and family living. Boys and girls, together, learn to share the responsibilities of home life. Another technique, that of student-teacher planning, is developing the homemaking program around home problems, lending increased flexibility to the program, and encouraging a closer alliance of the program with the community.

The emergent trends in homemaking education, then, seek to treat some of the disturbing factors in family life such as divorce, poor health, crowded housing, and the increasing number of women in our working force, by focusing the content of the courses on these problems. Because of

the nation-wide solicitude over the stability of family life, increased activity may be expected in the homemaking field in American secondary schools.

Industrial Education

In order to avoid confusion, the discussion of this segment of the practical arts will begin by defining the terms used to delineate the two somewhat dichotomous viewpoints which prevail in industrial education. "Industrial arts" signifies that phase of industrial education designed to develop certain habits, attitudes, and abilities desirable for all citizens of an industrial society. On the other hand, "vocational-industrial education" or "trade and industrial education" pertains to that phase of industrial education which trains students for specific jobs in the industrial world.

The historical development of each of these aspects will be treated separately; current trends will be examined together.

Trade and Industrial Education. As the rising tide of industrialism in the decades following the Civil War deposited factories on the Eastern Seaboard, it submerged the efforts of the apprenticeship system to supply skilled workers for multiplying industrial plants. To resuscitate the supply of trained workers, employers began to institute on-the-job training programs, and private trade schools appeared in the larger cities. The public high school, however, afforded little help; few vocational-industrial education courses were available for secondary school students prior to 1895.

In the first decade of the twentieth century, three governmental reports influenced the growth of vocational-industrial education in the secondary schools. The United States Commissioner of Labor published two comprehensive surveys of industrial education in both Europe and the United States in the years 1902 and 1910. A study of the need for industrial education in Massachusetts, known as the "Douglas Commission Report," printed in 1906, greatly stimulated interest in this field. Also in 1906, the formation of the National Society for the Promotion of Industrial Education resulted in extensive activities toward obtaining support for programs in industrial education.

After the passage of the Smith-Hughes Act in 1917, only the great depression of the 1930's flattened the rising curve of enrollments in federally reimbursed vocational-industrial courses. Nonetheless, in 1937 enrollment in this program stood at 580,905. During the period of World War II, enrollments soared much higher.

Each of the titanic inventions of modern times—the automobile, the airplane, and the use of electronics—has left its mark on the vocational-industrial curriculum. Early courses centered around the machine shop and the woodworking shop. As automobile registrations reached into the millions, auto mechanics courses became a standard offering in high school. During World War II, thousands of aircraft workers received training in high school courses. As the electronics industry began to exhibit the gargantuan characteristics of today, high schools responded with offerings in this field. But because the occupations in the trade and industrial category

are so multifarious, it has been found that a realistic program must be adapted to the industries and the employment needs of the local community. Vocational-industrial courses are as diversified as industry itself.

Industrial Arts. The roots of the industrial arts extend to the manual training theories of Comenius, Locke, Rousseau, Pestalozzi, and Froebel. The exhibits of work from the manual training schools of Europe at the Centennial Exposition in Philadelphia in 1876 provided the immediate impetus for industrial arts education in the United States. Having seen these exhibits, Calvin Woodward opened the St. Louis Manual Training School in 1880, the first school of this type.

A few industrial arts courses were found on the schedules of public high schools in the nineteenth century, but the twentieth century saw the real acceptance of industrial arts in secondary schools. Increased enrollments bringing boys and girls who seemed unable to cope with "academic subjects," the rise of junior high schools pointing toward vocational exploration, and the growth of theories of education stressing the importance of activity experiences played a role in extending the industrial arts program in our secondary schools. By 1930, one survey of 17,632 secondary schools disclosed that four out of every five students were enrolled in industrial arts courses.

The junior high school seems to be the focal point of the industrial arts program. Subjects most commonly found are woodwork, electrical work, metals, and mechanical drawing. Some junior high schools have a series of unit shops, such as a woodshop, sheet metal shop, and electrical shop; each boy spends a certain amount of time in each shop. Other schools have an arrangement whereby all units are offered in one large shop, called the general shop. Another type of organization is known as the "laboratory of industries," offering experiences in industrial subjects, with emphasis placed upon industrial information rather than upon hand skills. The extent of these industrial arts programs in junior high schools may be gleaned from the results of a survey by the United States Office of Education in 1938, in which it was found that more than two-thirds of all registrations in industrial arts shop courses were in the seventh and eighth grades.

In the senior high school, the prevalent type of organization is the unit shop. The subjects are usually elective and are commonly either one or two semesters in length. The range of work covered in the unit shops includes woodwork, sheet metal work, electrical work, auto mechanics, printing, and machine shop. Mechanical drawing is also offered. Larger high schools may provide several distinct curriculums in industrial arts, the concentration in each following the categories mentioned above.

Trends in Industrial Education. Whether a secondary school emphasizes industrial arts or vocational-industrial education hinges primarily upon three factors: the philosophy of the instructional staff, the size of the school, and the location of the school. Because of differences in these factors, a general statement of trends in favor of one or the other is subject to dispute. However, there seems to be a swing toward the concept that

both are important, and that a department which neglects one at the expense of the other is inadequately servicing the needs of *all* students within the school.

In the field of industrial arts, these trends are coming to the foreground: increased attention is being given to guidance through exploratory experiences in industrial occupations. As in other practical arts, the consumer education objective of industrial arts is being stressed; one example of this tendency is the development of the home mechanics shop, in which students learn to repair home fixtures and appliances. Lastly, just as boys are being welcomed into homemaking departments, so girls are being encouraged to enroll in industrial arts courses, which in the past have been exclusively a male domain.

Since vocational-industrial education is specific in character, many different types of offerings are found in secondary schools throughout the country. Successful programs are closely co-ordinated with the community through community surveys, advisory committees, and use of community resources. Rather than preparing students only for highly specialized industrial jobs, vocational-industrial education is making inquiry into its role in training students for the semi-skilled industrial occupations which are growing in number as machine operations continue to increase their importance on the industrial scene.

Finally, the combination of actual work experience with technical training at the school is being recognized as the means that may best produce the skills required by those who will earn their livelihoods producing and servicing the products of our industrial age.

Conclusion

Should this article conclude without mentioning the life adjustment education movement, the discussion of the practical arts would be incomplete. In this newest attempt to attune secondary education to the needs of youth, a key concept revolves around a sincere attempt on the part of secondary educators to cement the fissure which has needlessly cleaved "vocational" education and "general" education. Among the planks of the "life adjustment" platform are increased work experience and a closer alliance between the school and the community. The similarity between the trends in the practical arts and the aims of life adjustment education is obvious. Not only do these themes permeate the practical arts, but they reverberate throughout the entire field of secondary education. In this concept exists the hope of secondary educators to meet the challenge of providing the general education required by *all* the youth who will be thronging the corridors of the secondary schools within the next decade.

Ventura: A Living Example of the New Practical Arts Teacher and His Program

By JOHN B. CROSSLEY

It is generally believed that the proof of the pudding is in the eating. Dr. John B. Crossley, Superintendent of the Ventura Union High School and Junior College District, has had an unusual opportunity to observe the activities of a progressive, imaginative industrial education faculty charged with the responsibility of completely reorganizing an industrial education program. His report is a challenge to all secondary educators in California.

Dr. Crossley graduated from Pomona College, obtained his master's degree from Claremont College and his doctorate from U.C.L.A. After seventeen years of experience as a teacher, principal, and district superintendent in several school districts in southern California, he assumed his present position in 1950.

In addition to his other qualifications, Dr. Crossley is a master at the art of bringing the community into the planning and the programs of the school, and the Ventura reorganization has been characterized by dynamic co-operation among all those who have an interest in the public schools.

During the past three years, teachers and administrators of the Ventura Union High School District have been busily engaged in "writing the book" for a new—to Ventura—educational system. This unique opportunity in educational planning arose because the Board of Trustees decided in 1949 that the 4–4 organization of the district, in effect for some twenty-three years, should be changed to a 3–3–2 plan. Naturally, among the fields of study in which there was interest was the whole program of industrial education. With the assistance of consultants and with the benefits of study and visitation, we have looked anew at the purposes of industrial education programs in a junior high school, a senior high school, and a junior college. We hope our attitude of continuing study and development in this subject field will lead to constant re-evaluation and improvement.

It has been most interesting to watch the play of conflicting points of view, theories, and identification of goals, as men charged with the development of an industrial arts program at the junior high school, for instance, met with men who identify the purpose of industrial education at the college to be vocational training. Those charged with the development of the high school program have had challenging experience in determining the

balance of industrial arts emphasis versus vocational emphasis that should prevail in the high school program. Here it is recognized that a certain percentage of the boys will not have the benefit of the more extensive vocational emphasis provided in the junior college, but rather will seek immediate employment upon graduation from the twelfth grade.

Many of us working on these problems have had experience, over the years, in determining the purposes and procedures of other industrial arts offerings in other school districts. We have waged a long battle to raise the status of the industrial arts program in the minds of both faculty members and students, to avoid the "dumping ground" fiasco. We have seen a gradual and encouraging improvement in the prior training and inservice training programs given industrial education teachers. We have seen a growing number of administrators become interested in and support an improved program in this area for boys, and in some instances girls, as the effects of added leisure time, the growing technological age, and the need for a broader educational experience for young people have become realities. All of these trends have, it seems to us, culminated in very definite evidence of a "changed conception" in the practical arts programs developed by members of our Ventura staffs in reorganizing the district.

Each of the following paragraphs identifies our newly adopted point of view as to the general objectives of our industrial education program. In each are evidences, we believe, of a "changed conception."

1. *Health.* The very heavy emphasis on safety in the shop, which is a part of every industrial education course we offer in grades 7 through 14, includes such a broad interpretation of the word "safety" that, literally, these units can be called health education. Our people are no longer content to identify as their responsibility only the teaching of safety habits in the handling of tools. Rather, their units in this field include particular attention to sensible clothing, cleanliness and sanitation, the care of the eyes, the broad understanding of the effect of noxious odors and contaminated dust on the breathing system. With skillful teaching and with the incentive the shop atmosphere provides, our graduates all their lives should be conscious of good health practices as well as good safety practices, not only in the shop, but in their homes and their communities.

2. *Family Life Education.* Particular emphasis is given to this objective in the junior high school and high school programs. Here we find our instructors encouraging boys to elect projects in the various shop fields that will make a contribution to their present homes, and most particularly will qualify them to be capable and interested in home ownership, maintenance, and repair. Correlation with units in homemaking courses for girls adds incentive to both boys and girls to approach the skills and knowledges of home management with enthusiasm. The many opportunities for co-operative organization in the management of the shops we believe contribute to future home membership.

3. *Character Development.* Our industrial education men are conscious and jealous of the fact that the informality of their teaching environment,

equalled possibly only by those of counselors and physical education teachers, provides real opportunities for them to contribute to the character development of their students. Probably in no area of our curriculum is there more accomplished in the development of traits of honesty and integrity than in industrial education. Setting high standards of co-operation, helpfulness to others, patience, and understanding through the incentives of safety, development of skills, care of equipment and tools, and accuracy in accounting for supplies used, our shop instructors are doing a superior piece of work. We find these men volunteering their services to our counselors in helping boys who are having difficulties in other classes or on the campus in general. In instance after instance, because of the opportunity for growth of mutual respect provided by the climate of the shop, these men are contributing greatly to the development of worthy character. At the college level, considerable emphasis is given to the importance industrial management assigns to character traits in its search for employees. Our people are doing everything in their power to see that the men getting vocational training in a wide variety of industrial skills are, through the leadership of their school instructors, developing proper attitudes toward work, an understanding of fair practices on the part of management and labor, and the concept of an honest day's work for an honest dollar.

4. *Leisure Time.* It has long been thought that the experiences of boys in the various shop areas in the secondary schools might well provide incentive and interest in life-long participation in such activities as hobby shops at home. We are pleased to see that our instructors are broadening the value of shop experiences by increasing the number of mediums in which youngsters work, encouraging them to begin related hobbies while still in school, and giving guidance in the establishment of hobby shops in garages, play rooms, or anywhere else they can find space. We find co-operation between our shop instructors and physical education instructors, for example, where the latter provide incentive for boys to build recreational equipment at their homes. We believe that this interest on the part of our industrial education people will result more and more in youngsters who have a well-established enthusiasm for wholesome activities to occupy their constantly increasing amount of leisure time as adults.

5. *Citizenship.* Much that has been said above concerning the attention our industrial education instructors pay to the character development of our students relates also to their keen awareness of their opportunities in developing good citizens. As in many other districts, we find our instructors organizing shop boys in an administrative and working arrangement with job foremen, stockmen, etc., all getting an experience in co-operative citizenship. An increasing number of interest groups formed under our club program are growing out of the interests represented by our shop program. Here, too, opportunities for citizenship training are realized and carried out by our instructors.

6. *Fundamental Skills.* At a recent meeting of all our shop instructors, it was reported that there was some thought that in the next school year,

throughout all our classes, an effort would be made to give attention to improvement in English usage. While plans are not yet formulated, it was explained that all instructors, regardless of subject matter, might be asked to give, in addition to content grade, a second grade on all written and oral work, based on the quality of English used. It was gratifying to see that unanimously the industrial arts men accepted this plan as worthwhile and gave assurance of their full co-operation. Not too many years ago, when a similar suggestion was made to a group of industrial arts men, their response was that they would resent such a request, since they considered their primary responsibility to be full attention to the development of shop skills. Here again is evidence of a changing conception on the part of industrial education teachers in relation to the purposes of their teaching.

7. *Vocational Competence.* In the planning at Ventura, we are very conscious of a growing sureness on the part of industrial education men in the junior high school and high school that the purpose of their courses is to offer broad training incorporating emphasis as discussed above, while the junior college men continue to provide learning situations leading directly to vocational competence in shop skills. Equally interesting is the fact that our trade and industrial education instructors at the college level, while aware that the vocational aspects of shop training are their prime responsibility, are also incorporating into their courses much that now bears the label of general education. Here, again, are evidences of a changing conception. The junior high school–high school group are finally believing in the broad purposes of their work, and the college people are becoming aware of the need for the industrial worker to have broad training leading to the complete citizen, including in their work more than strictly technical and vocational emphases.

For fear that there might be those who think we are lessening the importance of industrial arts in this reorganized district by bringing into industrial education broad purposes and objectives often left to other teachers in other departments, may I point out that the reverse is true. *Our recognition of the value of the subject field is so great that in our junior high school all boys are required to take three full years or six semesters of industrial arts.* To the best of our knowledge, we have the only junior high school program, at least in the southern part of the State, where more than four semesters of industrial arts are required. In our senior high school curriculum we offer a total of six fields in industrial education. An equal number are offered in the college, plus some twelve apprenticeship programs organized through the State Plan in co-operation with contractors and with the trades in our county.

What has been said above relating to the purposes of industrial education in Ventura applies as well to all areas of the practical arts. In homemaking, business education, etc., we find more and more that our teachers are incorporating into their objectives and into their courses of study emphasis in experience and training leading to the development of more broadly educated youth.

Teaching the 3 R's in the Industrial Arts Program

By B. GORDON FUNK

That the industrial arts shop, whether the teacher be conscious of the fact or not, serves as a learning place for many of the basic so-called "academic" skills is a philosophy becoming increasingly widespread today. Specific examples of how this learning takes place are recounted here by B. Gordon Funk, Supervisor of Industrial Education in the Division of Secondary Schools of the Los Angeles City Schools. Mr. Funk's philosophy has been formulated on the basis of a wide experience, including fourteen years of work in the carpentry and mill cabinet trades, six years of teaching industrial arts, and six years of supervisory experience in the Los Angeles schools. He is a graduate of the University of California and obtained his master's degree from Claremont Graduate School.

Satisfying the creative desire to make something is one of the objectives of industrial arts and one of the reasons most young boys are interested in taking "shop." Because entering seventh graders in junior high school are so full of this desire, their industrial arts teacher is challenged to harness and direct it. The wish to make a lamp or a coffee table for Mother, a toy or wagon for a younger sister, or a smoking stand for Dad, is the end and all for most students in industrial arts.

But the teacher's purpose is not only to guide the student to build a fine project but also to teach him many other skills by capitalizing on his interest. For the teacher, the project is a vehicle of learning through which, stimulated by student motivation, much practice is offered in the basic 3-R skills and many opportunities occur for instruction in a social environment.

It is not generally recognized that the industrial arts project is used as a vehicle to teach the 3-R skills. While it is common knowledge that tool skills are taught here, only those familiar with the point of view of industrial arts educators know that there is also a definite program of instruction in academic skills. This article will describe a few concrete examples of the innumerable methods used to teach the basic academic skills in industrial arts shops.

In every industrial arts project there comes a time when consideration must be given to making a list of materials and to computing their cost. For example, if the student is making a bookcase of Philippine mahogany, the

list of materials is "taken off" a blueprint. To "take off" a material list from a blueprint is a skill in itself and one of the valuable learnings resulting from such a project. It is a form of reasoning and identification of spatial relations basic to mathematical concepts. An example of a list of materials follows:

5 pcs.	⅝" x 8½" x 28"	Shelves
2 pcs.	¾" x 9" x 46"	Sides
1 pc.	¾" x 3" x 28"	Apron
1 pc.	⅝" x 6" x 28"	Back
1 pc.	¼" x 28" x 36"	3-ply back

His list prepared, the student next must make a lumber bill. The problem to be solved is to draw from the lumber room sufficient material to cut the needed pieces with the least possible waste. With the instructor's guidance, the student writes a lumber bill as follows:

24 lin. ft. 1" x 10" Phil. mah. @ 28¢ bd. ft.
1 pc. ¼" x 30" x 36" D.F. ply—good 1 side @ 12¢ sq. ft.

The skill required to make this lumber bill is not gained in the first few weeks of a class in industrial arts woodwork, but most students, by the time they reach high school, can draw up a simple lumber bill and a cutting list. To figure the lumber bill requires fine reasoning and ability to do a high degree of abstract thinking.

Figuring the cost is the next step in preparing to make the bookcase. The student has opportunity to practice his knowledge of fractions and learns practical methods of using them. A board foot is 1" thick and 12" wide by 12" long, in practice shortened to 1" x 12" x 12". To find the cost of the piece of wood 24' long by 1" thick by 10" wide, the student must calculate:

$$\frac{1'' \times 10'' \times 24'}{1'' \times 10'' \times 12''}$$

An instructor inspecting this fraction is aware at a glance that essentially the problem is ⅚ x 24, or 20 board feet. The student, however, must learn that the 12" in the denominator is not in the same terms as the 24', and he must change the 12" to 1' or, though it would hardly be advisable, change the 24' to 288". An inspiring learning situation develops when the student not only works this problem mathematically, but also has a chance to measure the rough boards and lay out on them the pieces to be cut. To complete the problem: 20 bd ft. @ 28¢ totals $5.60 plus 90¢ for the plywood, equals a total of $6.50. The student who realizes that he himself will pay this amount is motivated to make very few mistakes and to check and double check to be sure he is right. One problem applied and solved in this fashion is a very practical lesson, and remarkable retention results.

The student faces a similar problem working in the print shop. As a graduating senior, he may be assigned the project of producing the gradu-

ation program. This production includes designing the program, selecting the paper, purchasing the stock, cutting, printing, folding, and meeting a deadline. The student may decide on a paper which is purchased in sheets of 34″ x 44″. The printing order requires 1,500 copies; the size decided on is 5″ x 7″ with a simple fold. The problem will be how many sheets of paper are needed to cut 1,500 pieces 10″ x 7″. The instructor checks the student's computation, and may even require a layout of his cutting plan if there was an error in computing or if there is any other reason to doubt the student's understanding of the factors involved. The mathematical computations are checked automatically when the stock is cut, since if there are not 1,500 pieces the student is forcibly made aware of his error. Therefore, he has a purpose in improving his skill in arithmetic.

In the printing department there is also a fine opportunity to teach correct spelling and reading; the application of reading in the auto mechanics shop, however, is not as readily apparent. A description of common industrial arts shop practices in the use of standard manuals published by automotive companies will indicate how the reading program functions. Since auto shop is one of the most technical fields in industrial arts, teachers and students must rely on standard texts, manuals, and catalogues for the greater amount of detailed information. In advanced auto mechanics programs the projects are "live" jobs. The students work on cars brought into the shop for repair. Good practice emphasizes the educational aspects of the live job, de-emphasizing the service element. The teacher picks the jobs to fit the educational requirements of his teaching program.

For purposes of illustration let us assume that a student is assigned a repair job on a late model car. The car needs a carburetor overhaul and a tune-up. Before he starts the job, the boy is assigned a reading lesson on carburetors and ignition in the general auto mechanics textbook. For direction and emphasis, the instructor reviews the salient points with him. Then the student reads the pertinent material in the service manual for that car, published by the manufacturer. From this manual the student learns how to dismantle the carburetor. He discovers the causes of the malfunctions described by the owner and how to repair and assemble. After dismantling the carburetor, the student inspects it for wear and replaces the worn and broken parts.

Once again he needs to turn to written material to locate parts numbers, descriptions, and costs in the catalogue. These parts catalogues are complicated technical books; reference to them involves the use of the index, the careful check of car make, model, types of parts, sizes, and other detailed data. Once the right part is located, a purchase ticket is made out with all of the necessary details. Then the local automotive supply house is requisitioned for the part.

Reference to the motor manual aids in the reassembly of the carburetor, a check of its working order, and resulting adjustment. In the tune-up procedure the use of complicated testing equipment involves reference to charts, tables, and directions for the operation of the equipment. When the

car again operates like new, the student must prepare a statement for parts and materials used in the repair so that the owner can be billed.

Reading skills are promoted in all shops through technical vocabulary building. In the Los Angeles City Schools each industrial arts instructional guide contains a list of basic words to be defined, spelled, and used by the teacher in daily lessons and demonstrations. In many classes the students list these words in notebooks and use them in sentences.

In industrial arts areas such as wood, metal, and printing there is general agreement that mastery of fundamental tool skills also requires the building of a vocabulary of names of tools, materials, and processes. Where the disagreement arises within the profession is in the number of words students need to learn at different grade levels. Research has resulted in setting a minimum vocabulary of fifty words each semester, or a total of three hundred words for a majoring student. While this may seem to be a large technical vocabulary, many teachers feel that three hundred words for a major in a field is too few.

Word recognition and vocabulary building are promoted by the use of the names of tools in the tool racks, displays of materials identified by name and technical data, and identification through displays of processes, such as joints, fasteners, devices, etc.

Standard testing techniques are used in industrial arts programs. Here the students use reading skills and develop vocabulary through completion, multiple choice, and matching tests.

Industrial arts teachers need to have a greater understanding of the gulf in the learning process between mastery of a speaking vocabulary and of a written vocabulary. Since command of a written technical vocabulary is often the criterion which separates the foreman or supervisor of the skilled trades from the journeyman, it is essential to develop this written vocabulary.

In the preceding paragraphs, illustrations of practice in mathematics and reading included examples of writing. The writing skills developed in the industrial arts program are technical, such as bills of material, requisitions, job outlines, and material descriptions. Of special note are the writing skills developed in drafting, where construction and material specifications are learned while completing detailed working drawings.

The basic academic skills are, then, an integral part of the teaching process in industrial arts. Reading skills are developed because the student has purpose and need for information. He builds word recognition and comprehension. He develops skill in the organization of technical materials and develops problem-solving methods by using manuals and catalogues. The student learns new words by their use in the "doing" phases of the program. He develops other skills allied to reading by using indexes, glossaries, and reference books.

Insistence upon accurate records and stress on industrial standards encourage the development of skill in spelling. Legibility in the preparation of requisitions and forms is a naturally motivated requirement, because

the student himself is sent to parts houses for repair materials, to be purchased on the basis of the forms he has made out.

Basic mathematical concepts are developed consistently through the instructional program in industrial arts since in all subject fields there are materials to be measured. When a student in the machine shop says, "The tolerance is plus or minus .002," he demonstrates a measuring concept and a mathematical appreciation of high order. The development of spatial and quantitative judgments is an outgrowth of "learning by doing" through shop mathematics. Estimating skills are acquired in shops through the use of materials of known standard dimensions. Above all, the student learns that mathematics is a practical tool and not merely an abstract science.

When the uninitiated looks at a bookcase, he observes finish, material, and design. He should realize that the finished project can also be a highly efficient vehicle of learning which has carried the student through a learning pattern involving most of the basic academic skills, side by side with the specialized skills of the woodworker.

NATIONAL COUNCIL OF "CORE" TEACHERS FORMED

Forty-two nationally prominent educators (teachers, administrators, and curriculum pioneers) from 15 states were invited guests of the College of Education of West Virginia University, October 30–31, at a conference called "To Consider the Establishment of a National Council of Core Teachers." Mrs. Grace S. Wright of the United Office of Education was conference chairman.

Following the deliberations of the two-day meeting, two resolutions were adopted. The first provided that a national interim committee be established (1) to explore the possibilities of an organization of core curriculum teachers and directors on a national basis, and (2) to serve as a steering committee for a year to plan for a general conference open to all next year.

Dr. Roland C. Faunce, associate professor of education at Wayne University, was elected chairman of the interim committee. Dr. John M. Mickelson, assistant professor of education at Temple University was chosen secretary, together with the following members:

Region I (Ohio, Indiana, Illinois, Michigan, and Minnesota)—Dr. Faunce and Leslee J. Bishop, Evanston (Illinois) Township High School.

Region II (New York, New Jersey, and Pennsylvania)—Dr. Arno Bellack, Columbia University and Dr. Mickelson.

Region III (Maryland, Virginia, and West Virginia)—Frank Klase, Prince George's County, Maryland, and Harold Full, West Virginia University.

Region IV (Alabama, Florida, and Tennessee)—Gladys Baxter, Murphy High School, Mobile, Alabama, and James Faulhaber, Florida State University.

Mrs. Grace S. Wright was elected a member-at-large to the committee, which was empowered to select additional members from regions west of the Mississippi.

The delegates voted in the second resolution to accept the invitation of Wayne University to have the second national conference on their campus in Detroit in the fall of 1954.

Chairman Faunce announced that the first meeting of the interim committee will be held in Atlantic City in February in connection with the meeting of the American Association of School Administrators.

Both . . . And . . .

By B. LAMAR JOHNSON

Although he is known as one of the most active leaders in the field so often called "general education," Dr. B. Lamar Johnson, Professor of Education at the University of California, Los Angeles, has never denied the values of the practical arts. His plea in this article is for a proper balance among all the fields of education.

Dr. Johnson holds his degrees from the University of Minnesota. After five years of high school and college teaching and additional graduate work in library science at the University of Michigan, Dr. Johnson became Librarian and Dean of Instruction at Stephens College in Columbia, Missouri. A comparative newcomer in California, Dr. Johnson moved west in order to undertake leadership in the California Study of General Education in the Junior College in 1950. From work on that study, published in 1952 by the American Council on Education, it was only a step to permanent residence in California, where fifty-eight junior colleges provide a fertile field of activity for an educator so intensely interested in the junior college movement.

Ought our schools and colleges to prepare students primarily for earning a livelihood? Or ought their central emphasis to be upon general education? What is the relative importance of general and of vocational education?

It is the purpose of this paper to examine some of the implications of these questions and to consider them as a basis for answering the question: What should be the relationship of general and vocational education?

What Is General Education?

General education has had many and varied definitions. It has been described as "that education which leads to an understanding of the major fields of knowledge and of the interrelationships between them." It has been referred to as "the non-specialized, non-vocational education which should be the heritage of all." It has been defined as "education for the common life," as an "education educating man's humanity rather than indulging his individuality," and as "that form of education which prepares people for their common activities as citizens in a free society." Some definitions stress fields of learning and their relationships. Some see general education as a core of absolutes to be found in the "great books." Some emphasize the common needs and activities of the students. Some single out the needs of society and the demands these needs place upon all

citizens. Others recognize both the characteristics of students and those of society. Some regard general education as a body of subject matter, others as a process of learning, others as a combination of content and process.

Members of the workshop which opened the California Study of General Education in the Junior College early recognized the importance of defining general education. The workshop was, however, aware of the dangers of hair-splitting arguments over definition. Following long study and much discussion some members of the workshop argued, "Perhaps general education cannot adequately be defined in one succinct statement. Perhaps it can only be described."

This viewpoint soon prevailed, as members of the workshop agreed that general education can best be defined through a statement of its goals. They further agreed that these objectives must be based upon both (1) the needs and other characteristics of students and (2) the characteristics, needs, and demands of society.

Following this agreement members of the workshop developed the following statement of objectives which became the definition of general education used in the California Study of General Education in the Junior College:

General education is that part of education which encompasses the common knowledge, skills, and attitudes needed by each individual to be effective as a person, a member of a family, a worker, and a citizen. . . . The general education program aims to help each student increase his competence in:

Exercising the privileges and responsibilities of democratic citizenship.

Developing a set of sound moral and spiritual values by which he guides his life.

Expressing his thoughts clearly in speaking and writing, and in reading and listening with understanding.

Using the basic mathematical and mechanical skills necessary in everyday life.

Using methods of critical thinking for the solution of problems and for the discrimination among values.

Understanding his cultural heritage so that he may gain a perspective of his time and place in the world.

Understanding his interaction with his biological and physical environment so that he may adjust to and improve that environment.

Maintaining good mental and physical health for himself, his family, and his community.

Developing a balanced personal and social adjustment.

Sharing in the development of a satisfactory home and family life.

Achieving a satisfactory vocational adjustment.

Taking part in some form of satisfying creative activity and in appreciating the creative activities of others.

It will be observed that the above statement of purposes is introduced with a sentence that some might regard as a definition of general education. Workshop members preferred, however, to look upon this statement simply as a topic sentence, introducing the definition (statement of objectives) which follows.[1]

What Is a General Education Program?

The questions are often asked: What is a general education program? Does it consist of a particular group of courses (communication skills, family life, general biology, and the like) specifically planned for the purposes of general education? Or is it a college-wide program in which faculty members in all courses and fields utilize the opportunities which they have to contribute to the achievement of general education outcomes in their particular areas?

The answer to these queries are, in large measure, conditioned by the definition of general education which has been presented above. If general education is defined by stating its purposes, it necessarily follows that general education occurs at any point in the student's experience at which he advances toward the achievement of one or more of the goals of general education. This is true, regardless of whether that experience occurs in a course in communication or in calculus, in cosmetology or in carpentry; regardless of whether it occurs in a course in family living or in philosophy, in photography or in forestry; regardless of whether it occurs in a counseling conference or in the councils of student government, on the athletic field or on the staff of the college annual.

Under this concept a really effective general education program cannot be limited to a few selected courses labeled "general education." Faculty members in all fields and departments, sponsors of extraclass activities, and student counselors must be aware of their potential role in contributing to the general education of the students with whom they work.

A danger in accepting this point of view lies in the fallacy of assuming that in a program with such school-wide emphasis, no specific courses giving central emphasis to particular general education objectives are necessary. Regardless of the extent to which teachers of merchandising, music, and mathematics contribute to the skills of communication, almost all students will need specific instruction in English or communication. Regardless of the extent to which sponsors of clubs, coaches of athletic teams, and instructors in auto mechanics and economics recognize the principles of human relations and personal adjustment, courses in psychology aimed at these particular outcomes are essential. Similarly, specific courses directed to particular goals of general education are needed in such areas as family life, citizenship, health, and creative arts.

These considerations clearly indicate that the effective general education program provides both school-wide emphasis upon goals of effective

[1] For a more complete discussion see B. Lamar Johnson, *General Education in Action*, Washington, American Council on Education, 1952, pp. 19–32.

living and courses (and, in student programs, time for taking them) directed toward specific general education objectives.

What Is the Relative Importance of General and Vocational Education?

"In view of the influence of vocation upon the life of the individual it is surprising that a greater share of the curriculum is not devoted to the practical aspects of earning a living."

* * *

"Our universities have degree-granting colleges of pharmacy, landscape gardening, physical education, and secretarial science. Should one who has attained skill in filling a prescription, planting a roadside, coaching a horseshoe or football team, or answering the telephone and transcribing shorthand be considered educated? I do not depreciate these skills. But they are not education."

* * *

"While a knowledge of such fields as the arts, language, philosophy, history, and others is of importance to society, still I believe these fields are secondary, at least at this time, to the production of the material necessities and luxuries."

* * *

"Having a regular job and getting paid for it may seem like an adequate ideal in early adolescence. When you have achieved it, you understand that it is merely a necessary condition of life, not life itself. The problem of the purpose and meaning of life remains, but if your education has not helped you solve it, it has been no education at all."

* * *

"The real core of the curriculum ought to be vocational, with all subject matter areas making their particular contributions to vocation."

* * *

"Even in world conflict we have won our battles by technical superiority and then lost them because we did not have the general education and the knowledge to make the peace successfully. We win on the battlefields and lose on the rice fields because we do not understand the ways of life and the ideas of other peoples."

Quotations such as these—from the pronouncements of educators and other leaders of American thought, from personal correspondence files, from "Letters to the Editor"—suggest a controversy that now, as it has through the ages, rocks the foundations of education.

Actually these quotations suggest a false dichotomy which today exists in the minds of all too many, educators and laymen alike. Our need in America is not for *either* vocational education *or* general education. Rather our nation demands and our citizens require *both* a general education *and* a vocational education.[2]

[2] See also Johnson, *op. cit.*, pp. 3–18, 220–54.

General education and vocational education must not, and need not, be set one against the other as competitors for the taxpayer's dollar, for the teacher's talents, and for the student's time and energy. The one defensible unity in education is that which occurs within the learner: the student, who, to be effective as a worker, requires a happy home life, the ability to communicate, and the ability to work with people—outcomes commonly regarded as purposes of general education. On the other hand, the same student, to be effective as a citizen and as a person, needs to earn an adequate livelihood in a vocation suited to his particular aptitudes, goals, and interests—outcomes recognized as the aims of vocational education.

What Should Be the Relationship Between General and Vocational Education?

The relationship of general and of vocational education may be suggested by the following generalizations which emerge from the preceding discussions:

1. General education can best be defined in terms of its purposes.

2. General education can occur in vocational courses; similarly, vocational education can take place in general courses.

3. The effective general education program requires the participation of all faculty members, including teachers of vocational courses; likewise, the effective program of vocational education demands the participation of teachers of general courses.

4. The student needs to be prepared, both to earn a living and to live a life.

The school or college faculty which is committed to developing an educational program consistent with these viewpoints will find the following steps necessary:

1. Agree upon the purposes of general education; in other words, define general education.

2. Develop faculty-wide plans and programs for making appropriate contributions to these purposes in all fields of instruction and counseling, extraclass activities, and administration.

3. Develop courses particularly planned to achieve general education objectives in such universally important fields as communication, family life, creative activity and appreciation, citizenship, and personal adjustment.

4. Provide in students' programs sufficient time to take those general education courses required for vocational success and for effective living.

5. Agree upon vocational objectives; in other words, define vocational education.

6. Develop faculty-wide plans and programs for contributing to the vocational objectives of students—not only through vocational courses

but also through general courses, through counseling, through extraclass activities.

7. Develop courses particularly planned to contribute to the needs of students in preparation for the employment fields which they plan to enter—including particularly areas in which the community and society need workers.

8. Provide in the student's program sufficient time for taking those vocational courses which are required for occupational effectiveness.

Conclusion

Throughout the development of the educational program the faculty must recognize that the only defensible points of emphasis in the curriculum are (1) the needs and other characteristics of students and (2) the needs and other characteristics of the society in which students live and of which they are a part. Any program thus conceived will inevitably provide *both* a faculty-wide emphasis on general education *and* courses addressed to specific general education outcomes; *both* faculty-wide contributions to vocational education *and* vocational courses addressed to specific vocational objectives (including time in the student's program to take such courses); and an institution-wide respect and concern for *both* vocational education *and* general education—a recognition of the student's need, *both* to earn a livelihood *and* to live a life.

RECOGNIZING THE ANXIOUS STUDENT

Frequent cheating is often a sign of anxiety. To the anxious child, who frequently suffers from feelings of inferiority, every test represents a new threat to his self-esteem. Pressure or need to achieve will cause him to cheat rather than to face what he fears will be further proof of his inferiority.

The anxious student is frequently tense. Although he may have studied conscientiously, he will be very ill at ease if called on by the teacher. In the classroom, he is usually restless and unable to concentrate; at home, his parents may have observed his sleeplessness or unhappiness which seems to be without cause.

The more severe cases of anxiety manifest themselves in excessive perspiration, belching, nausea, frequent urination, faintness, or dizziness.

None of these symptoms is in itself proof of anxiety. A student may not be concentrating because the level of reading or discussion presents no challenge to his abilities. Cheating is influenced by environmental factors and the views of the rest of the peer group toward it. But a student who shows a dread of tests or being called on in class; who cheats even if his mental ability is adequate or is unable to concentrate even when there is a challenge to his ability; or who displays the physical reactions mentioned above, needs the attention of the teacher and the counselor.

—Lyle M. Spencer, *Guidance Newsletter*, December 1953.

Technical Institute Curriculums: Changing Conceptions in the Junior College

By J. PAUL MOHR

One of the busiest areas of activity in vocational education today is that of technical education in the junior college. Currently chairman of the Committee on Accrediting Technical Institute Curriculums for Northern California, Oregon, Washington, Idaho, and Montana, Dr. J. Paul Mohr, President of Sacramento Junior College, speaks with authority on this subject. A graduate of the University of California, with a doctorate from the same institution, his own background is in the field of mathematics, which he taught in high schools and at Marin and San Francisco junior colleges, and from which he was led into an active interest in the education of students of engineering. Dr. Mohr has been President of the Northern California Guidance Association, President of the California Junior College Association, and Chairman of the State Athletic Committee of the California Junior College Association.

The technical advances made in the fields of engineering and manufacturing during the past thirty years have widened the gap between the skilled craftsman who works in the industry and the engineer who designs the product and develops the process for its manufacture. Skilled technicians who do not require the advanced technical knowledge of the graduate engineer, but who need more of a background in science and mathematics than does the average skilled worker, are needed in ever-increasing numbers to fill this gap. For example, Vocational Division *Bulletin No. 228*, U.S. Office of Education, points to studies showing that for each engineering position there is need for from four to twenty technicians.

The problem of providing proper training for these individuals is one to which the junior colleges in California have given and must continue to give considerable attention. Some of the factors which should be kept in mind in any study of this problem are as follows:

1. The *Fortune* survey of a number of years ago showed that 70 percent of the parents of boys wished their sons to have a college education, and the parents of 61 percent of the girls wished to have their daughters have a college education.
2. Current studies indicate that there will be a shortage of engineers for many years.
3. The population of California is becoming continuously more urban.

4. The high schools in urban communities are more and more shifting to the sixty-minute period from the forty-five-minute period.

5. There has been a very high elimination of students during the first year or two of the engineering curriculum in comparison with other curriculums.

These factors are producing changes in the background and preparation of the young people who are coming to junior college in a number of ways which are significant for our current discussion. Among them might be listed the following factors: Students tend more and more to take college preparatory curriculums, so that the major portion of their time in high school is taken up with what have been traditionally called the academic subjects. The shift from a forty-five-minute period to the hour period also contributes its influence toward restricting student programs to academic subjects because the number of periods available to students is reduced. The student who takes a normal college preparatory program has room left for very few electives. This means that the student has very little time for such subjects as freehand sketching, drafting, machine shop, electric shop, and the like. The urbanization of our population means also that our young people are growing up without doing chores and working with tools and materials. They have not had to repair tools and equipment. Their experience in working with materials and metals usually would be limited either to tinkering with radios or working over a jalopy. By and large this experience is not enough to give them much understanding of modern metals and tools, and the methods of handling them. Thus the young man or woman who is interested in mathematics and physical science frequently plans to go to college to become an engineer, often making this selection of a life goal without understanding the nature of the work an engineer does or the great variety of activities carried on by the various branches of the engineering profession.

The need therefore is for a first semester of work in the junior college which will give the student as broad an experience as possible in the various aspects of engineering and at the same time allow him the maximum freedom in choosing his further education without encountering severe handicaps. Among these choices must be the continuation of his education as an engineer in one of the branches of that profession, such as civil, mechanical, electrical, and mining, or a curriculum leading to employment as an engineering aid, draftsman, member of a surveying party, and the like.

The courses suggested as being most suitable for this first semester are: Mathematics, Engineering Drafting, Plane Surveying, Manufacturing Processes, and Orientation for Engineers.

The advantages of this program are that it not only provides an opportunity for the student to be introduced in the orientation course to the various fields of engineering, but it also gives him some practical experience in several types of work characteristic of the engineering profession.

For example, the course in surveying usually opens the student's eyes to one large aspect of the work of the civil engineer. It also leads to an understanding of the outdoor type of work which is usual in many activities of the profession. The course in engineering drawing not only gives the student some insight into that common tool of all engineers, namely, graphical representation, but also affords particular emphasis to the type of representation used in mechanical engineering. It further provides the student experience with a type of indoor work which engineers may be required to do. The course in manufacturing processes gives the student some experience with various metals used in modern industry, and develops a degree of understanding of modern cutting tools and metal working machinery. This course also offers some experience with production methods and manufacturing problems, and so increases his understanding of another area of engineering. When these various experiences are correlated with the orientation course and with the student's abilities in mathematics and physical science, both the student and his counselor have a much better understanding of the place where the student may fit into the wide scope of the engineering profession.

A sizable number of students discover that their abilities and talents are such that the curriculum which they should pursue is not the traditional one leading to the bachelor's degree in engineering. It is rather the two-year curriculum leading to junior college graduation and preparation for entry into the engineering profession at the technician level. Among the technical curriculums which such students might take after completing this first semester would be Architectural Drafting, Building and Contracting, Electrical Technology, Engineering Drafting, Mechanical Technology, Operating Engineering, or Surveying and Map Drafting.

This training can best be described by using the definition established by the Engineers' Council for Professional Development.

Definition: Technical institute curriculums are essentially technological in nature and intermediate between those of the high school and the vocational school on the one hand and the engineering college on the other. Curriculums in this field are offered by a variety of institutions and cover a considerable range as to duration and content of subject matter, but have in common the following purposes and characteristics:

1. The purpose is to prepare individuals for positions auxiliary to but not in the field of professional engineering.

2. Curriculums are essentially technological in nature, based upon principles of science, require the use of mathematics beyond high school and emphasize rational processes rather than rules of practice.

3. Curriculums are briefer, more intensive, and more specific in purpose than collegiate engineering curriculums, though they lie in the same general fields of industry and engineering. Their aim is to prepare individuals for specific technical positions or lines of activity rather than for broad sectors of engineering practice.

4. Training for artisanship is not included within the scope of education of technical institute type.

The technical institute curriculum should be so designed that the student receives considerable instruction in fields related to his major study. In other words, the student should first be well grounded in the fundamentals of engineering, and then his training should be specialized in one field. The other three semesters of a curriculum in Engineering Drafting might well consist of the following courses: (Second semester) Engineering Drafting, Advanced Machine Shop, English, Surveying, Industrial Relations; (Third semester) Engineering Drafting, Welding and Sheet Metal, Descriptive Geometry, Elementary Strength of Materials, Speech, Industrial Safety, U.S. History; (Fourth semester) Engineering Drafting, Materials of Engineering Construction, Map Drafting, American Institutions, State and Local Government, Engineering Field Trips, Supervision and Foremanship. In addition the student must also complete the required courses in physical education and hygiene.

Small junior colleges will find that they can offer a curriculum of this type if they will utilize to full advantage the shops and laboratories which are available and the skills of the various members of their faculties. It might be necessary, in a few instances, to secure the assistance on a part-time basis of some of the members of the engineering profession who are working in the community. Larger junior colleges will find that they can offer several of these curriculums by utilizing all of their existing resources. Very large junior colleges will be able to offer as many curriculums as the types of employment in the community would warrant being established.

It is recognized that the type of program suggested above will not provide for the training of all the types of technicians which modern industry needs. No way, for example, has been found whereby students may be given a good introduction to the field of radio and electronics and its many industrial applications during the first semester of this curriculum. On the other hand, the development of an approach of this type means that many young people who have talents which are rather rarely found among the general population will be given an opportunity to make their much needed contribution to the society in which they live.

No-Man's Land in the Practical Arts

By KERMIT A. SEEFELD

The increasing complexity of our industrial economy is forcing us to change our ideas concerning the function of industrial education in our public schools, believes Dr. Kermit A. Seefeld, Chairman of the Department of Industrial Arts at Santa Barbara College, University of California. A graduate of Oshkosh State Teachers College in Wisconsin, Dr. Seefeld has done graduate work and research at the University of Minnesota, Princeton University, Colorado A. and M. College, the University of Southern California, and Stanford University, where he obtained his doctorate. He is a frequent contributor to periodicals in the industrial arts field, and he is President of the Tri-County District, California Industrial Education Association and of the Kiwanis Club of Santa Barbara.

As Chairman of the committee now engaged in revising the State Guide for Industrial Arts, Dr. Seefeld typifies Santa Barbara's industrial arts teacher educators, who have established for their department over the years a prominent position among leaders in industrial arts in California.

Members of the teaching profession have been told repeatedly that teacher educators should offer leadership. One of the functions of such leadership involves the constant sensitivity to new ideas and current trends. The prevailing attitudes and backgrounds of teachers in the practical arts today offer the teacher educator food for thought. The practical arts and vocational areas may differ somewhat from many other fields in that vocational teachers usually receive a part of their preparation in a trade, but an increasing number of vocational men have in recent years been pursuing baccalaureate and even master's degrees. Because of this trend, there is occasion for the teacher educator to venture a statement about changing emphases.

In an attempt to clarify our thinking, it will be well to reiterate the differences existing between what is accepted as "general education" and "vocational preparation." Knowing that vocational education is preparation for securing employment and success in a chosen endeavor and that general education is broad preparation for the man on the street, no matter what his vocation, we are faced with a knotty problem: Where does general education terminate and where does vocational education begin?

Many educators who have been plagued with the inability to categorize these areas are also aware of the confusion this inability has forced upon

the public and upon school administrators. If the profession finds it impossible to delineate these areas, pity the poor layman. As an example of the concrete problems involved, a case in point might be the difficulty of determining by name or fact what an industrial arts sixth-semester-sequence course should be. Many times, if it is in a high school, the course is called industrial arts; in other schools specialization of this type may be referred to as vocational education. Might it not be possible for the sake of clarity to invent a new name for the no-man's land which exists between general education and special education?

A changing labor structure also dictates the necessity for a shifting emphasis. The many thousands of job classifications pose a real problem for the modern educator. Education no longer involves the relatively simple responsibility of preparing a boy to be a farmer or a blacksmith, but has become a complicated enterprise which encompasses many types of positions in many areas of the country. It is now necessary to offer general preparation for many different positions with the hope that a good general background will provide a foundation for the specialization that will and must be learned on the job. More and more people will need more and more basic information and skills.

An undiscerning individual, apprised of these ideas, might immediately deduce that there is now no need for practical education and that the entire education effort should be expended toward a more general education. I believe that he might be right, for the most part, *provided* two facts are set forth and considered in the plans.

First, all industrial arts should be general education. It would be foolhardy to say that all of it is, but the profession can honestly point with pride to profound accomplishments toward the aims of general education. The school shops of tomorrow will look different. Early-day shop planning attempted to simulate the industrial plant, but new industrial innovations preclude the possibility of the school's duplicating the efforts of industry. Many in the profession believe that the future school shop will look like the modern research and development laboratory. The shift in educational emphasis will be from "making" to "thinking" and "problem-solving." The project, which in the past was the "making" program, for the most part will become a problem. In other words, the student will learn less about how to make specific industrial products but will be encouraged to devise ways and means of solving problems associated with industry. More related information will be required in an attempt to build up a background for solving problems. Teachers will not say to a class: "Today we will begin making a footstool from pine lumber." The approach might better be: "What industrial product would you like to make, what material would you use, what design would you like, what method of construction, and what finish would be appropriate?"

A second reason for changing emphasis in practical education is that there are basic skills which an effective citizen in our society must learn and which can only be learned in the practical arts. Language arts educators

proudly justify their method and content with the necessity for learning how to express ideas. Practical arts educators do not challenge language arts accomplishments but do challenge the inference that ideas can be conveyed only by the written or spoken word. What about the musician? He best understands another's thinking via sound. Mathematicians convey ideas best by the number concept. An equation puts the written word to shame in both clarity and speed of expression.

Practical arts educators have the responsibility and the real obligation to teach the techniques of conveying ideas by symbols. The whole language of industry is offered to the practical arts student in his attempt to think and convey ideas, both two- and three-dimensional. Mechanical drawing, schematics, or symbolics speak more potently than the written word to the man of industry. All citizens of our society decipher this language when looking at drawings, symbols, maps, graphs, and photographs.

If all education in the future is to be general, or suitable for everyone, what about the vocational educator who is concerned with training the specialist? His responsibility exists now as it did in the past. The responsibility for technological advancement in large part is his. Ideas become a reality because of the many and excellent skilled men who have been prepared through vocational education. This new trend means, however, that his second and ever-increasing obligation is to offer more general education along with the special.

Summarizing, it is believed that the no-man's land between general and special education should be named in an attempt to clarify the responsibilities of two distinct phases of practical arts. Second, new cognizance should be given to the twofold objective of practical arts: the increasing emphasis on general education, and development of basic skills which members of our industrial society should possess and can learn only in the practical arts.

FROM BILLION TO TRILLION

The word "trillion" is beginning to make its appearance in official Washington conversations.

Among the first to use it were delegates to the Midcentury Conference on Resources for the Future. They have received information that by 1975 the United States will produce goods and services valued at three-quarters of a trillion. This would enable the nation to spend from 12 to 15 billion dollars for public education, nearly three times the amount being spent today.

The look toward the trillion is one of many projections the Conference is making to see what kind of life lies ahead for the second half of the Twentieth Century.

—*Education Digest*, January 1954

BOOK REVIEWS

THE FOURTH MENTAL MEASUREMENTS YEARBOOK

Oscar Krisen Buros, editor. Highland Park, New Jersey: The Gryphon Press, 1953. 1163 pp. $18.00.

This is the most recent volume of a series that began with the publication of the *1938 Mental Measurements Yearbook* almost fifteen years ago. The stature of the *Yearbooks* among test users in education and psychology has increased with each edition to the point where only the ill-advised will deny their indispensability to the serious members of these professions.

The *Fourth Yearbook* consists entirely of new material covering the years 1948 through 1951 and, continuing past policy, supplements rather than supplants the previous yearbooks. A few statistics may reveal the monumental nature of the book. The section "Tests and Reviews" contains descriptions of 793 commercially available tests published as separates in English-speaking countries, 596 original test reviews by 308 reviewers, 53 excerpts from test reviews in 15 journals, and 4,417 references on the construction, validity, and use of specific tests. The section "Books and Reviews" lists 429 books on measurement and 758 excerpts from book reviews in 121 journals. A reviewer of one of the earlier volumes referred to it as "the mental test Baedeker"; in view of the foregoing description, the label surely can apply to the present volume without running the risk of an unnecessary hyperbole!

This yearbook and its predecessors deserve a place in the professional libraries of all schools. The constant availability of such a competent and frank reference will contribute much to the reduction of unsystematic and uncritical selection, acceptance, and use of tests in educational practice.

ARTHUR P. COLADARCI
Associate Professor of Education
Stanford University

KNOWING YOUR NEWSPAPERS

Geraldine Saltzberg. Yonkers-on-Hudson, New York: World Book Company, 1953. Kraft. x + 102 pp. 96 cents.

This is one of the best books relating to the unit in English or Social Studies that is usually called "Appreciation of the Newspaper." The author was until recently chairman of the Department of English at James Monroe High School, New York City.

The purpose of the book is to assist students to read their newspaper intelligently. To some extent, the book is also helpful in assisting students to read their newspaper critically. The author first presents certain background information about newspaper content and methods and then sup-

plies criteria for the evaluation of some of the content (e.g., columnists and the comics).

Unlike some of the earlier books and pamphlets of this kind, the author does not suggest such unrealistic notions as the one that advertisers influence the editorial policies of most newspapers. Nor does the author discuss "propaganda" in such a way as to make high school students skeptical of everything they read in the newspaper.

The exercises and other activities are calculated to help the students to do their own work and to reach their own conclusions. The author has adopted sound criteria for evaluation by the students. Teachers of English and Social Studies who are ignorant of newspaper practices or who have acquired a smattering of knowledge about newspapers from such unreliable and doctrinaire critics as Seldes will find this a very reliable little textbook.

CHILTON R. BUSH
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NEW PUBLICATIONS

Publications recently received in the *Journal* office include the following books and pamphlets:

Crouch, Winston W., and Bollens, J. C. *Your California Governments in Action.* Berkeley: University of California Press, 1913, 296 pp. $2.75.

Folk Dance Guide. Paul Schwartz, editor and publisher. Box 342, Cooper Station, New York 3, N.Y. 4th annual edition. 1954. 15 pp. 50 cents.

Minneapolis Public Schools, *Achieving the Objectives of Education: A Guide for Curriculum Development,* 1953, 23 pp. Also a *Supplement,* 11 pp.

National Council of Teachers of English, *Censorship and Controversy,* November 1953. 56 pp. 75 cents.

Planning and Caring for Our Schools. The 1953 Report, Conference on Operation and Maintenance of School Buildings and Conference on School Planning. Stanford: Stanford University Press. 70 pp. $3.00.

Suggested Courses of Instruction in Industrial Arts for the Junior High School Level. Prepared by California Industrial Arts Committee, California State Department of Education, Sacramento, 1953. 47 pp.

The Pre-Adolescent Exceptional Child. The Woods School, Lanhorne, Pa., 1953. 68 pp.

Uhl, Alexander. *The Assault on the U.N.* Public Affairs Institute. Washington 3, D.C., 1953. iii + 35 pp. 25 cents.

University of Southern California Curriculum Laboratory, *Fire Prevention for Secondary Schools,* New York, International Association of Fire Chiefs, 1952. 63 pp.

Walker, Robert A., and Cave, Floyd A. *How California Is Governed.* New York: The Dryden Press, 1953. xi + 251 pp. $1.95.

Wattenbarger, James L., *A State Plan for Public Junior Colleges: With Special Reference to Florida.* Gainesville: University of Florida Press, 1953. xii + 83 pp. $1.50.

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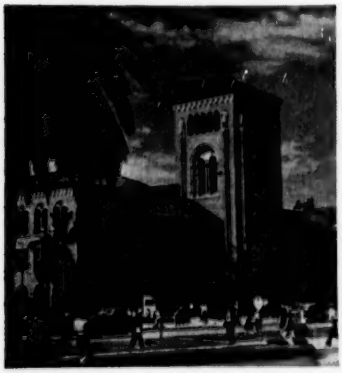

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